WALSH'S NEW PRIMARY ARITHMETIC

D. C. HEATH & CO. BOSTON

NEW PRIMARY ARITHMETIC

BY

JOHN H. WALSH

ASSOCIATE SUPERINTENDENT OF SCHOOLS, THE CITY OF NEW YORK

BOSTON, U.S.A.
D. C. HEATH & CO., PUBLISHERS
1907

INTRODUCTION.

THE NEW PRIMARY ARITHMETIC is designed for the use of pupils of the second, third, and fourth school years, the first chapter covering the ground to be completed by the end of the second year, and each of the remaining chapters furnishing a half-year's work.

In the distribution of the subject-matter, care has been taken to combine the best features of the spiral and the topical arrangement, and to adapt the work at every stage to the growing powers of the pupil. A large quantity of material for drill is provided under each subdivision before a new one is taken up, while carefully graded reviews are continued throughout.

Especial attention has been given to the grading and the character of the problems. They deal with numbers smaller than those used in the corresponding abstract work; the conditions are limited to such as are within the experience or the comprehension of the average pupil; and the solution of those in the earlier chapters involves but a single operation.

CONTENTS.

CHAPTER I.

ADDITION AND SUBTRACTION.

CHAPTER II.

MULTIPLICATION AND DIVISION—UNITED STATES MONEY—PINT, QUART, AND GALLON—FRACTIONAL PARTS—ROMAN NOTATION.

CHAPTER III.

MULTIPLICATION AND DIVISION — OUNCE AND POUND — TWO OPERATIONS — HALVES, THIRDS, FOURTHS — MULTIPLICATION BY A MIXED NUMBER — SQUARES AND RECTANGLES.

CHAPTER IV.

MULTIPLIERS AND DIVISORS OF TWO OR MORE FIGURES — MULTIPLIERS CONTAINING FRACTIONS — ADDITION AND SUBTRACTION OF EASY MIXED NUMBERS — INCH, FOOT, AND YARD — AREAS OF RECTANGLES.

CHAPTER V.

MULTIPLIERS AND DIVISORS OF THREE OR MORE FIGURES — ADDITION AND SUBTRACTION OF EASY FRACTIONS — MULTIPLICATION BY A MIXED NUMBER — EASY DENOMINATE NUMBERS — AREAS OF RECTANGLES.

NEW PRIMARY ARITHMETIC.

CHAPTER I.

ADDITION AND SUBTRACTION.

ADDITION.

1. Oral Problems.

1. A girl pays four cents for a slate and one cent for a pencil. How much do both cost?

● ● ● ● and ●

2. There are three pears on one plate and two on another. How many are there on both plates?

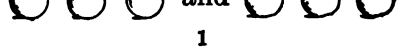
 and

3. John had two marbles. How many had he after buying four more?

● ● and ● ● ● ●

4. Mary is four years old, and Harry is two years older. How old is Harry?

5. A boy lost three apples and had three apples left. How many had he at first?



6. How many cents will it take to buy a five-cent ball and a two-cent kite?

7. Ned has four large firecrackers and four small ones. How many firecrackers has he?

8. How many wheels has a bicycle? How many has a tricycle? How many have both together?

9. I paid six cents for Roman candles and three cents for torpedoes. How many cents did I spend?

10. William rode four miles to his uncle's and four miles home again. How many miles did he ride?

NOTATION AND NUMERATION.

2. The first nine numbers are written as follows:

One.	Two.	Three.	Four.	Five.	Six.	Seven.	Eight.	Nine.
1	2	3	4	5	6	7	8	9

Zero, or nothing, is written 0.

3. Oral Exercises.

Add at sight:

2	3	5	4	3	4	2	3	2
4	2	1	5	3	2	5	6	3
1	0	5	7	1	0	6	4	0
3	9	0	2	5	4	3	4	7

2	3	4	6	0	8	4	9	1
6	5	0	2	0	1	3	0	6
7	2	3	8	1	4	3	7	6
1	0	4	0	1	1	1	0	1
0	5	3	2	0	6	5	0	5
6	2	0	1	8	0	3	1	4
1	0	1	2	1	0	1	2	1
2	5	8	2	7	3	0	7	4

NOTE. Brief drills should be given *regularly*, upon the preceding combinations, as well as upon those that follow. It is important, however, not to waste time by prolonging them too much.

4. Ten is written 10.

Ten and one are eleven, written 11. Ten and two are twelve, written 12. Thirteen is written 13. Fourteen, 14. Fifteen, 15. Sixteen, 16. Seventeen, 17. Eighteen, 18. Nineteen, 19.

Twenty is written 20. Twenty-one, 21. Twenty-two, 22.

Thirty, 30. Forty, 40. Fifty, 50. Sixty, 60. Seventy, 70. Eighty, 80. Ninety, 90.

5. Write in figures:

Twenty-three. Thirty-one. Forty-two. Fifty-four. Sixty-five. Seventy-six. Eighty-seven. Ninety-eight.

Twenty-five. Thirty-six. Twenty-seven. Forty-eight. Twenty-nine. Fifty. Fifteen. Seventeen. Seventy. Ninety-nine. Eighty-four.

6. Read the following numbers:

11	34	45	13	10	95	16	46	19
83	17	54	36	50	40	33	63	72
75	64	48	68	18	69	12	23	57

The right-hand figure is called the *units' figure*; the left-hand figure is called the *tens' figure*.

7. Written Exercises.

If there are 12 boys in the first row and 11 boys in the second row, how many are there in both rows?

Write the numbers, placing the units' figure of the second under the units' figure of the first. Add the right-hand column, placing the total, 3, underneath. Then write the total of the other column. The answer is 23 boys. Use *b.* for boys.

12 *b.*
11 *b.*
23 *b.*

8. Add:

1. 22	**2.** 10	**3.** 31	**4.** 16	**5.** 25
30	45	14	40	2
6. 50	**7.** 13	**8.** 26	**9.** 15	**10.** 27
6	42	30	41	12
11. 48	**12.** 72	**13.** 29	**14.** 15	**15.** 63
51	23	40	62	15

16. 76	17. 27	18. 90	19. 63	20. 36
20	71	8	30	63
21. 20	22. 46	23. 57	24. 60	25. 71
75	40	31	35	26

9. Written Problems.

1. How many are 21 cows and 13 cows?

Write *c.* for cows.

2. 16 apples and 10 apples? 40 roses and 21 roses? 30 firecrackers and 50 firecrackers? 22 cents and 41 cents?

3. Mary paid 50 cents for a doll and 15 cents for a rubber ball. How much did both cost?

Write ¢ for cents.

4. There were 16 horses in the field. A man put in 3 more. How many horses were then in the field?

5. Jane is 10 years old; her mother is 20 years older. How old is her mother?

6. A farmer sold 40 eggs on Monday. On Tuesday he sold 24 eggs. How many did he sell on both days?

7. There are 32 pages in John's book. In William's book there are 14 pages more than there are in John's. How many pages are there in William's book?

8. How much would you pay for a quart of ice cream at 40 cents and a quart of strawberries at 15 cents?

9. If there are 50 boys in one class and 40 boys in another class, how many are there in the two classes?

10. A girl has read 25 pages in a primer and 40 pages in a first reader. How many pages has she read in both books?

11. There are 14 houses on one side of a street and 13 on the other side. How many houses are there on both sides?

10. Oral Exercises.

In adding these and subsequent examples, the pupils should use as few words as possible. In the first example, six — eight is said; five — nine, in the second; three — eight, in the third, etc.

Add:

2	4	5	2	2	4
4	2	1	2	3	2
2	3	2	2	2	2
3	6	2	1	5	1
3	2	3	5	2	6
3	1	4	2	2	2
2	1	2	4	5	3
2	2	0	2	1	1
2	3	4	0	2	1
2	2	2	3	1	3

11. Oral Problems.

1. A wheelbarrow has 1 wheel, a cart has 2 wheels, and a wagon has 4 wheels. How many wheels are there on all three?

2. A boy has 5 cents in his bank, 3 cents in his desk, and 1 cent in his pocket. How much money has he?

3. How much should I pay for a 5-cent ball, a 2-cent top, and a 1-cent kite?

4. Frank gave 3 cherries to Mary, 3 to Fred, and had 3 for himself. How many had he at first?

5. There are 3 pictures on one wall, 2 on another, 1 on another, and 2 on another. How many pictures are there on the four walls?

6. A girl pays 4 cents for a slate, 3 cents for a blank book, and 2 cents for a lead-pencil. How much does she pay for all of them?

7. There are 3 books on the first shelf, 3 on the second shelf, and 3 on the third shelf. How many are there on the three shelves?

8. A boy reads 2 pages on Monday, 2 on Tuesday, 2 on Wednesday, and 2 on Thursday. How many pages does he read in four days?

9. There are 3 birds on one branch, 2 on another, 1 on another, 2 on another. How many birds are on the four branches?

10. William is 5 years old, James is 2 years older than William, Sarah is 2 years older than James. How old is Sarah?

12. Original Problems.

Make problems containing the following numbers:

2	3	4	5	2
4	2	2	1	2
2	1	3	2	2

Thus: a duck has 2 feet, a cat has 4 feet, a hen has 2 feet. How many feet have they?

My father gave me 2 cents, my mother gave me 4 cents, Uncle John gave me 2 cents. How many cents had I then?

13. Written Exercises.

Add:

1. 22	2. 43	3. 17	4. 6	5. 35	6. 11
12	5	20	21	21	55
5	20	41	30	12	22
7. 35	8. 33	9. 1	10. 13	11. 52	12. 17
13	33	16	42	4	60
41	33	50	34	12	1
13. 50	14. 4	15. 41	16. 53	17. 25	18. 65
31	60	42	2	10	31
7	5	3	4	3	2
19. 40	20. 64	21. 25	22. 50	23. 50	24. 72
4	2	10	25	30	4
5	3	2	10	5	2
20	10	1	2	3	1

25.	26.	27.	28.	29.	30.
20	22	13	41	14	21
20	22	4	12	2	32
20	22	20	13	60	43
20	22	2	20	12	2

14. Written Problems.

1. How much will be paid for a pound of 50-cent tea, a pound of 25-cent coffee, a pound of raisins at 10 cents, and a 3-cent orange?

2. There are 30 boys in the first class, 42 in the second class, and 24 in the third class. How many are there in the three classes?

3. 22 girls had the right answer, and 17 had wrong ones. How many girls were in the class?

4. Martha has a 50-cent piece, a 10-cent piece, and a 5-cent piece. How much money has she?

5. I bought a piece of muslin for 24 cents, some ribbon for 20 cents, and a spool of thread for 5 cents. How much did I pay?

6. There are 24 cherries on one branch, 20 on another, and 40 on another. How many are there on the three branches?

7. A hunter shot at a flock of blackbirds. He killed 10, and 16 flew away. How many were there in the flock?

8. There are 25 ducks in the pond, and 24 on the bank. How many are there in all?

9. Mrs. Jones bought a doll for Mary for 24 cents, and one for Sarah for 24 cents. How much did she pay for the dolls?

10. A boy paid 20 cents for firecrackers, 10 cents for torpedoes, 5 cents for pinwheels, 4 cents for sky-rockets. How much money did he spend?

SUBTRACTION.

15. Oral Problems.

1. A boy spent 9 cents for a blank book and a slate. The blank book cost 5 cents. How much did he pay for the slate?

2. Mary wishes to buy a 5-cent doll. She has 3 cents already. How many more cents does she need?

3. Sarah is 6 years old. In how many years will she be 8?

4. Thomas took out 6 marbles. He brought back 8. How many did he buy?

5. What number must we add to 4 to make 7?

16. Oral Exercises.

8 and what are 9?	3 and what are 5?
7 and what are 9?	2 and what are 4?
9 and what are 9?	7 and what are 8?
2 and what are 5?	3 and what are 6?
0 and what are 2?	4 and what are 7?
5 and what are 5?	4 and what are 6?
5 and what are 9?	4 and what are 8?
1 and what are 8?	3 and what are 7?

17. Give the missing numbers:

2	0	0	?	?	?	?
?	?	?	1	3	1	1
8	7	2	4	8	2	3

18. Oral Problems.

1. A girl has 6 cents. She spends 2 cents. How many cents has she left?

2. There were 5 pears on a plate. Some children ate 3. How many were on the plate then?

3. John had 8 marbles. How many had he after losing 4 marbles?

4. Harry is six years old. Mary is two years younger. How old is Mary?

5. A boy had 6 tops. He has 3 now. How many did he lose?

19. Sight Exercises.

Subtract:

$\begin{array}{r} 9 \\ 8 \\ \hline 1 \end{array}$ We see that 8 and 1 are 9. The answer is 1.

$\begin{array}{r} 5 \\ 3 \\ \hline 2 \end{array}$ 3 and 2 are 5. The answer is 2.

8	7	9	6	9	8	7
6	7	7	5	9	7	5
—	—	—	—	—	—	—
4	6	9	8	6	7	6
4	2	5	4	1	3	0
—	—	—	—	—	—	—

20. Original Problems.

Make problems in subtraction containing the following numbers:

Thus: there were 9 birds on a tree; 3 flew away; how many were left? A boy had 7 cents, he spent 4, how many cents had he then?

9	7	8	6	4
3	4	5	2	1

21. Written Exercises.

A boy has 25 cents. He pays 15 cents for a ball. How much will he have then?

25¢ 15¢ 10¢	Write the larger number above the smaller, the units' figures in a line. Begin at the units' column, and say 5 from 5 leaves **0** (write the 0); 1 from 2 leaves **1** (write 1). The answer is 10 cents.

22. Subtract:

1.	64	**2.**	87	**3.**	55	**4.**	28	**5.**	57	**6.**	46
	52		76		15		6		16		5
7.	70	**8.**	29	**9.**	18	**10.**	59	**11.**	66	**12.**	16
	30		18		5		36		33		6
13.	35	**14.**	63	**15.**	59	**16.**	38	**17.**	96	**18.**	81
	4		0		34		15		22		30

19.	88	20.	48	21.	75	22.	37	23.	29	24.	25
	43		24		50		3		5		10
25.	79	26.	98	27.	49	28.	66	29.	98	30.	45
	27		14		11		22		24		11

31. From 38 cows take 12 cows.

32. From 84 apples take 40 apples.

33. From 76 roses take 31 roses.

34. From 62 cents take 10 cents.

35. From 93 horses take 23 horses.

MISCELLANEOUS.

23. Written Problems.

1. A boy has 55 cents in his bank; his uncle gives him 10 cents more. How much money has he then?

2. James goes to the store with 75 cents; he buys 60 cents' worth of groceries. How much change does he bring home?

3. There are 32 boys in a class and 20 girls. How many more boys than girls are in the class?

4. There are 32 boys in a class and 20 girls. How many pupils are there in the class?

5. I did 60 problems last week; 40 were right. How many were wrong?

6. Sarah had 26 cherries; she ate 6. How many had she left?

7. There are 40 apples on one tree and 20 on another. How many apples are there on both trees?

8. Thomas wishes to buy a ball for 50 cents; he has saved 30 cents already. How many more cents does he need?

9. How much would a boy pay for a 25-cent ball and a 10-cent bat?

10. Ann buys a pound of 40-cent tea for her mother, and gets 10 cents change. How much money did she give the grocer?

ADDITION.

24. Sight Exercises.

Add:

9	8	2	7	5	3
1	2	9	3	5	9
8	7	9	6	3	2
3	5	2	4	7	8
5	5	8	6	8	9
7	8	5	7	4	5

25. *The sign of addition is* +, and is read **plus.**

2 + 3 = 5 is read, 2 plus 3 equals 5; or, 2 and 3 are 5.

26. Give answers:

7+6	9+8	9+4	6+5
6+5	9+6	5+9	9+9
6+9	6+8	8+6	4+9

27. Oral Problems.

1. Susan has 9 splints in one hand and 3 in the other. How many splints has she in both hands?

2. A boy buys a ball for 10 cents, and a bat for 5 cents. How much does he give for both?

3. There are 7 girls sitting in the first row, and 6 girls in the second row. How many are there in the two rows?

4. Samuel has 8 cents. How much will he have if his aunt gives him 5 cents?

5. A man pays $10 for a coat, $3 for a vest, and $2 for a hat. How much does he pay for all of them?

28. Add 28 and 7.

Write the numbers as before; add 7 and 8; the total is 15. Under the first column write the 5, adding the 1 to the 2 tens in the second column, making the total 3 tens. The answer is 35.

$$\begin{array}{r} 28 \\ +\,7 \\ \hline 35 \end{array}$$

29. *The answer in addition is called the* **sum.**

30. Written Exercises.

Find sums:

1. 16 4	2. 28 17	3. 39 46	4. 43 37	5. 65 29	6. 57 16
7. 36 25	8. 17 82	9. 58 15	10. 5 18	11. 23 35	12. 16 54
13. 24 24 24	14. 5 23 64	15. 16 5 25	16. 23 64 5	17. 20 15 8	18. 64 32 3
19. 27 26 25	20. 7 5 14	21. 15 8 42	22. 17 19 3	23. 27 7 21	24. 57 14 2

25. $15+3+12+36$

26. $84+6+6$

27. $18+14+12$

28. $11+9+33+20$

29. $50+20+10$

30. $45+24+5$

SUBTRACTION.

31. *The sign of subtraction is* $-$, and is read **minus.**

$5-3=2$ is read, 5 minus 3 equals 2; or, 5 less 3 equals 2.

32. Find answers:

1. 35	2. 64	3. 27	4. 36	5. 36	6. 49
−20	−14	−21	−15	+15	+25
7. 36	8. 38	9. 64	10. 84	11. 15	12. 26
−25	+27	+32	−42	−4	+26

The answer in subtraction is called the **difference,** *or* **remainder.**

33. Sight Exercises.

Give missing numbers:

1. 2+?=9	5. 3+?=11	9. ?−2=7
2. 8−4=?	6. 8+7=?	10. 8−?=5
3. ?−5=4	7. 9−6=?	11. 9+3=?
4. ?−7=2	8. ?+5=12	12. ?−8=2

34. Original Problems.

Make problems containing the following numbers:

1. 15	2. 9	3. 12	4. 6	5. 15
+3	−4	+7	−3	+1
6. 8	7. 8	8. 9	9. 9	10. 8
+5	−4	−4	+5	−5

35. Oral Problems.

1. William has 8 jackstones, and Mary has 5 jackstones. How many jackstones have both?

2. A grocer has 8 barrels of flour. How many will he have if he sells 4 barrels?

3. A boy has saved 9 cents. If he spends 4 cents for a blank book, how much money will he have?

4. What will be the cost of a 9-cent copy book and a 5-cent bottle of ink?

5. A man buys a coat for $8. He pays $5 in bills, and the remainder in silver. How much does he pay in silver?

36. *The sign $ stands for "dollars," and is written before the number.*

37. Written Problems.

1. What will be the cost of a horse and a wagon if the horse costs $75, and the wagon $20?

$$\begin{array}{r} \$75 \\ +\$20 \\ \hline \end{array}$$

N. B. — Write the proper sign in each case.

2. There are 24 hours in one day. How many hours are there in two days?

$$\begin{array}{r} 24\ h. \\ +24\ h. \\ \hline \end{array}$$

3. We have 60 minutes for reading and spelling. If we take 40 minutes for reading, how much time is left for spelling?

$$\begin{array}{r} 60\ m. \\ -40\ m. \\ \hline \end{array}$$

4. A woman pays 75 cents for tea and coffee. She pays 50 cents for the tea. How much does the coffee cost?

75¢
−50¢

5. What is the sum of 56 and 34?

6. A farmer had 37 cows. After he had sold 27 of them, how many did he have?

7. There are 45 trees in an orchard; 25 are apple trees, the rest are peach trees. How many peach trees are there?

8. There are 25 apple trees in an orchard, and 20 peach trees. How many trees are there in the orchard?

9. William had 26 cherries; he gave 13 to Mabel, and the remainder to Julia. How many did he give to Julia?

10. There are 50 yards in a piece of ribbon. How many yards are left after 20 yards are used?

38. Drills.

1. Add by twos:

0, 2, 4, 6, 8, etc., to 40;
1, 3, 5, 7, 9, etc., to 39.

2. Add by threes:

0, 3, 6, 9, 12, etc., to 39;
1, 4, 7, 10, 13, etc., to 40;
2, 5, 8, 11, 14, etc., to 38.

NOTATION AND NUMERATION.

39. The numbers from 1 to 9 are written with one figure.

How many figures do we use in writing the numbers from 10 to 99?

Ninety-nine and one make one hundred, written 100.

Two hundred is written 200; three hundred, 300.

40. Write in figures:

1. Four hundred.
2. Five hundred.
3. Six hundred.
4. Seven hundred.
5. Eight hundred.
6. Nine hundred.

Count from one hundred one to one hundred nine. One hundred one is written 101. In writing *hundreds*, we always use three figures.

41. Write in figures:

1. One hundred two.
2. One hundred three.
3. One hundred four.
4. One hundred five.
5. One hundred six.
6. One hundred seven.
7. One hundred eight.
8. One hundred nine.

42. Read the following:

1.	110	120	130	140	150
2.	300	400	500	600	700
3.	201	302	403	504	605
4.	343	454	565	676	787
5.	456	567	678	789	890

43. Write in figures:

1. Two hundred three.
2. Three hundred one.
3. Four hundred forty.
4. Seven hundred nineteen.
5. One hundred thirty-four.
6. Nineteen.
7. Eight hundred seventy-six.
8. Five hundred ninety-nine.
9. Seven hundred.
10. Seven hundred twenty.
11. Seven hundred three.
12. Seventy-five.
13. Six hundred forty-three.
14. Four hundred fifty-seven.
15. Nine hundred nine.

44. 1. Write the number that is one less than a hundred.

2. Write the number that is one more than a hundred.

3. Write the number that is one less than two hundred.

4. Write the number that is one more than three hundred fifty.

5. Write the number that is one less than four hundred twenty.

45. *In the number* 382, 2 *is called the* **units'** *figure,* 8 *is called the* **tens'** *figure,* 3 *is called the* **hundreds'** *figure.*

MISCELLANEOUS.

46. Drills.

1. Add by fours:

0, 4, 8, etc., to 40; 1, 5, 9, etc., to 37;
2, 6, 10, etc., to 38; 3, 7, 11, etc., to 39.

2. Add by fives:

0, 5, 10, etc., to 40; 1, 6, 11, etc., to 36;
2, 7, 12, etc., to 37; 3, 8, 13, etc., to 38;
4, 9, 14, etc., to 39.

3. Add by sixes:

0, 6, etc., to 36; 1, 7, etc., to 37; 2, 8, etc., to 38;
3, 9, etc., to 39; 4, 10, etc., to 40; 5, 11, etc., to 35.

47. Written Exercises.

Add:

1.	2.	3.	4.	5.
127	306	288	612	3
243	75	45	196	33
85	4	602	34	333

6. 838	7. 331	8. 38	9. 244	10. 52
123	528	452	42	36
30	86	38	98	35
11. 191	12. 864	13. 499	14. 733	15. 169
117	36	32	94	162
40	25	16	105	208
6	50	200	25	40
16. 629	17. 97	18. 487	19. 141	20. 635
80	406	110	155	298
3	95	25	203	13
55	201	3	237	43
21. 523	22. 870	23. 732	24. 521	25. 80
62	15	116	108	107
7	8	80	63	35
51	45	7	250	312
5	21	64	6	25
26. 34	27. 210	28. 250	29. 1	30. 512
605	35	300	22	33
21	406	45	333	240
83	21	3	44	16
112	3	27	555	108
31	74	101	20	30

48. Find sums:

1. $33+33+33+33$
2. $86+23+2$
3. $216+115$
4. $45+54+3+16$
5. $75+50+25$

Find answers:

6. $395-123$
7. $978-563$
8. $857-57$
9. $169-136$
10. $783-250$
11. $250-130$

49. Oral Exercises.

Give answers:

$10-9$	$10-1$	$11-2$	$11-9$	$10-5$
$10-8$	$11-3$	$12-6$	$13-9$	$15-6$
$13-4$	$15-9$	$14-5$	$11-5$	$10-4$
$12-5$	$10-7$	$12-4$	$11-7$	$14-8$
$16-7$	$17-8$	$18-9$	$17-9$	$14-6$

Drill upon the foregoing frequently and regularly, but not too long at a time.

50. Subtract:

1. 876	2. 978	3. 350	4. 391	5. 457
234	468	220	280	230
6. 583	7. 499	8. 605	9. 858	10. 667
102	479	300	836	43

11. 694 42	12. 667 310	13. 162 50	14. 952 301	15. 790 740
16. 598 508	17. 928 807	18. 548 540	19. 928 18	20. 564 304
21. 305 104	22. 889 615	23. 678 667	24. 858 45	25. 936 706

51. Oral Problems.

1. There are 10 birds on a tree. How many will there be if 5 more come?

2. If there are 11 boys belonging to a class, and 9 are present; how many are absent?

3. Lucy is 12 years old. How old will she be in 3 years?

4. Matthew is 11 years old. How old was he 4 years ago?

5. Patrick has 9 cents in his bank. How many more cents must he put into the bank to have 15 cents in it?

6. Andrew has two pockets in his jacket. He has 8 marbles in each. How many marbles has he?

7. A girl lives 12 houses from the school. After she passes 8 houses, how many more must she pass?

8. At a game of ball there are 9 boys on each side. How many boys are playing?

9. Sarah has 15 cents. If she spends 8 cents for worsted, how much money will she have?

10. A man buys two suits of clothes for his boy; he gives 9 dollars for each suit. How many dollars does he spend?

52. Original Problems.

Give answers. Make problems.

10+5	11− 9	12+3	12−4	15−9
8+8	2+13	9−5	13−6	14−8
12+5	9+ 8	10+7	16+1	14+3
11−8	10− 7	12−9	9+9	12+6

53. Oral Exercises.

Give missing numbers:

4−?= 1	6+?=11	3+?=12	?−7=2
?+5=12	12−?= 4	14−9= ?	10−?=5
	?−9=5	3+5+?=17	

54. Written Exercises.

Find missing numbers:

1.	2.	3.	4.	5.	6.
29	37	17	86	75	90
+?	+?	+?	+?	+?	+?
41	50	25	90	100	150

SUBTRACTION.

55. From 42 take 29.

Writing the larger number above the smaller, we see that the units' number 9 of the latter is greater than the other units' number 2. In this case we take 1 ten from the 4 tens leaving 3 tens, and add the 1 ten to the 2 units making 12 units. 9 from 12 leaves 3: write 3. 2 (tens) from 3 (tens) leaves 1 (ten): write 1. The answer is 13.

$$\begin{array}{r} 42 \\ -29 \\ \hline 13 \end{array}$$

56. From 806 take 274.

$$\begin{array}{r} 806 \\ 274 \\ \hline 532 \end{array}$$

4 from 6 leaves 2: write 2. Take 1 hundred, or 10 tens, from 8 hundred, leaving 7 hundred. 7 (tens) from 10 (tens) leaves 3 (tens): write 3. 2 (hundred) from 7 (hundred) leaves 5 (hundred): write 5. *Ans.* 532.

57. Written Exercises.

Subtract:

1.	60	**2.**	71	**3.**	34	**4.**	58	**5.**	91
	59		68		27		38		79
6.	72	**7.**	92	**8.**	84	**9.**	51	**10.**	63
	54		46		42		25		31

11. 34 7	12. 58 20	13. 91 12	14. 26 8	15. 57 8
16. 63 22	17. 62 3	18. 71 66	19. 60 57	20. 41 1
21. 100 10	22. 110 20	23. 200 11	24. 300 30	25. 100 1
26. 25 6	27. 24 17	28. 32 16	29. 74 18	30. 50 25

58. Find answers:

1. 94 −46	2. 48 +46	3. 67 −18	4. 49 +18	5. 18 +49
6. 423 −201	7. 576 +423	8. 375 −123	9. 576 −25	10. 375 +5

59. Copy and find answers:

1. $864+99$
2. $259+23+104+171+2$
3. $932-729$
4. $360-245$
5. $17+383+25+2$
6. $87-57$
7. $220-190$
8. $143-134$
9. $267-258$
10. $267-9$

60. Written Problems.

1. A man pays $75 for a sofa and $15 for a chair. How much does he pay for both?

2. A boy has 75 pictures; he gives away 15. How many has he then?

3. Find the difference between 25 and 50.

4. A newsboy pays 24 cents for newspapers; he sells them for 40 cents. What is his profit?

5. Two girls have 50 cents between them; one has 15 cents. How many cents has the other?

6. A farmer bought a cow and a pig. The pig cost $15. He paid $35 more for the cow than he did for the pig. What did he pay for the cow?

7. A pig and a cow cost $65; the pig cost $15. How many dollars did the cow cost?

8. Find the sum of 27 cherries and 46 cherries.

9. A boy sold newspapers for 40 cents; his profit was 16 cents. What did he pay for the papers?

10. A girl bought a doll for 28 cents; she received 22 cents change. How much did she give the storekeeper.

61. Drills.

1. Add by sevens:

0, 7, 14, etc., to 35; 1, 8, 15, etc., to 36;
2, 9, 16, etc., to 37; 3, 10, 17, etc., to 38;
4, 11, etc., to 39; 5, 12, etc., to 40; 6, 13, etc., to 34.

2. Add by eights:

0, 8, etc., to 40; 1, 9, etc., to 33; 2, 10, etc., to 34; 3, 11, etc., to 35; 4, 12, etc., to 36; 5, 13, etc., to 37; 6, 14, 22, etc., to 38; 7, 15, 23, etc., to 39.

3. Add by nines:

0, 9, etc., to 36; 1, 10, etc., to 37; 2, 11, etc., to 38; 3, 12, etc., to 39; 4, 13, etc., to 40; 5, 14, etc., to 32; 6, 15, etc., to 33; 7, 16, etc., to 34; 8, 17, etc., to 35.

62. Oral Exercises.

Give sums:

11+9	17+6	24+7	29+5	15+8
19+5	19+4	28+8	27+5	12+8
19+9	22+9	25+5	16+9	23+8
27+9	14+9	22+8	19+8	23+7
17+7	23+9	28+5	16+8	29+4
19+7	25+9	26+5	15+9	18+4
13+9	26+6	25+8	17+8	15+7
15+6	24+6	29+6	13+8	14+7

4	5	6	5	6	3	4	5
4	5	6	3	5	4	2	3
4	5	6	4	5	5	3	6
8	4	5	2	7	7	5	7
7	3	5	3	6	5	8	9
4	7	8	4	5	4	2	3

63. Oral Problems.

1. A boy caught 22 fish before dinner and 9 after dinner. How many did he catch in all?

2. There are 31 apples on a tree. How many will there be after 28 are picked off?

3. William has paid 5 cents for a ball and has 26 cents left. How much money had he at first?

4. A newsboy sold 28 morning papers and 7 evening papers. How many did he sell in all?

5. A man owes a bill of 15 dollars. How much will he owe after paying 6 dollars?

6. How much do I pay for a reader at 18 cents, a slate at 6 cents, and a copy book at 8 cents?

7. There are 60 pages in a primer. John has read 15 pages. How many has he yet to read?

8. A girl has two 10-cent pieces and two 5-cent pieces. How much money has she?

9. There are 11 roses on one bush, 7 on another, and 8 on another. How many are there on the three bushes?

10. If I spend 5 cents for figs, 5 cents for dates, 5 cents for candy, 5 cents for cakes, and 5 cents for a ball, how much do I spend in all?

11. There were 35 birds on a fence. How many were left after 28 flew away?

64. Written Exercises.

Subtract:

1. 986 407	2. 863 446	3. 952 335	4. 824 617	5. 713 405
6. 906 860	7. 735 595	8. 268 74	9. 837 40	10. 978 881
11. 666 77	12. 423 59	13. 384 96	14. 275 176	15. 803 794
16. 500 101	17. 487 366	18. 900 890	19. 777 88	20. 365 190
21. 876 678	22. 904 873	23. 275 196	24. 811 790	25. 243 99

65. Add:

1. 389 75 467	2. 654 179 98	3. 486 78 256	4. 289 289 289	5. 123 456 78
6. 150 607 23 65 116	7. 333 333 33 33 3	8. 666 66 60 6 6	9. 123 45 678 9 10	10. 257 432 48 109 92

11.	12.	13.	14.	15.
271	613	355	7	93
408	84	40	24	404
63	106	86	435	37
150	53	209	60	252
29	70	132	3	60
5	4	43	86	7

16.	17.	18.	19.	20.
324	649	568	473	209
77	107	37	65	28
468	84	77	65	593
46	99	166	358	84

21.	22.	23.	24.	25.
348	47	639	541	283
296	368	82	87	323
84	38	207	48	82
63	396	64	286	23
105	50	55	33	8

26.	27.	28.	29.	30.
278	135	70	166	95
63	79	309	166	50
54	246	88	166	95
459	80	246	166	163
46	399	87	166	88

66. Find remainders:

1.	2.	3.	4.	5.
789	864	748	789	975
236	579	654	327	887

6.	7.	8.	9.	10.
606	750	300	274	666
17	509	11	187	88

67. Written Problems.

1. A farmer pays 65 dollars for a cart and 15 dollars for a plow. How many dollars does he pay for both?

2. How much more does the cart cost than the plow?

3. There are 17 boys in the first row, 19 in the second, 13 in the third, and 16 in the fourth. How many boys are there in the four rows?

4. A man earns 90 dollars a month; he spends 73 dollars. How many dollars does he save?

5. Jane has 27 cents left after spending 23 cents for a reader. How much money had she at first?

6. A pupil added two numbers, and his answer was 60. If one number was 35, what was the other number?

7. A grocer bought sugar for 50 dollars, and tea for 30 dollars. How many dollars did he pay for both?

8. When Mary saves 25 cents more she will have 70 cents. How much money has she now?

9. 60 boys are working an example; 43 have the correct answer. How many are wrong?

10. A farmer raised 84 bushels of wheat. How many bushels will he have after selling 56 bushels?

CHAPTER II.

MULTIPLICATION AND DIVISION. — UNITED STATES MONEY. — PINT, QUART, AND GALLON. — FRACTIONAL PARTS. — ROMAN NOTATION.

MULTIPLICATION BY 2.

68. Oral Exercises.

How much would 2 three-cent oranges cost?

If 1 orange cost 3 cents, 2 oranges would cost 2 times 3 cents, or 6 cents.

What should you pay for 2 postal cards? 2 two-cent stamps? 2 three-cent tops? 2 pints of milk at 4 cents a pint? 2 five-cent base balls? 2 pounds of sugar at 6 cents a pound? 2 seven-cent dolls? 2 quarts of milk at 8 cents a quart? 2 yards of muslin at 9 cents a yard?

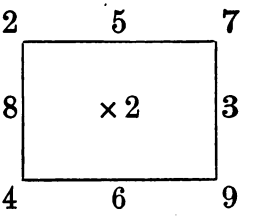
What are two 1's? Two 2's? Two 3's? Two 4's? Two 5's? Two 6's? Two 7's? Two 8's? Two 9's?

69. *The sign of multiplication is* $\times$.

$3 \times 2 = 6$ is read, 3 multiplied by 2 equals 6; or, 2 times 3 are 6.

70. Drill Exercises.

Give answers rapidly:



71. Written Exercises.

What would be paid for 2 first readers at 13 cents each?

We could find the cost by adding 13 and 13, but the better way is to do such problems by multiplication.

Placing the 2 under the 13, we say, 2 times 3 are 6, 2 times 1 are 2. The answer is 26 cents.

$$\begin{array}{r} 13¢ \\ \times\ 2 \\ \hline 26¢ \end{array}$$

72. *The answer in multiplication is called the* **product.**

73. Find products:

1.	10	2.	11	3.	12	4.	14	5.	20
	2		2		2		2		2
6.	21	7.	33	8.	34	9.	40	10.	41
	2		2		2		2		2
11.	42	12.	43	13.	110	14.	111	15.	112
	2		2		2		2		2

16. 113	17. 114	18. 123	19. 221	20. 232
2	2	2	2	2
21. 50	22. 344	23. 423	24. 304	25. 54
2	2	2	2	2
26. 63	27. 64	28. 72	29. 83	30. 94
2	2	2	2	2

DIVISION BY 2.

74. Oral Exercises.

If I pay 6 cents for 2 oranges, what is the price of 1 orange?

If 2 oranges cost 6 cents, 1 orange will cost as many cents as there are 2's in 6, or 3 cents.

75. What is the price of a postal card, if 2 postal cards cost 2 cents?

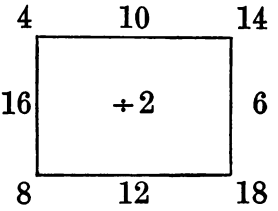
Of 1 postage stamp, if 2 stamps cost 4 cents?
Of 1 top, if 2 tops cost 6 cents?
Of 1 pint of milk, if 2 pints cost 8 cents?
Of 1 base-ball, if 2 balls cost 10 cents?
Of 1 pound of sugar, if 2 pounds cost 12 cents?
Of 1 doll, if 2 dolls cost 14 cents?
Of 1 quart of milk, if 2 quarts cost 16 cents?
Of 1 yard of muslin, if 2 yards cost 18 cents?

How many 2's are there in 2? In 4? In 6? In 8? In 10? In 12? In 14? In 16? In 18?

76. *The sign of division is* ÷.
$6 \div 2 = 3$ is read, 6 divided by 2 equals 3.

77. Drill Exercises.

Give answers rapidly:



78. Written Exercises.

How much will 1 first reader cost, if 2 readers cost 26 cents?

$2\overline{)26¢}$
$13¢$

Write 26; at the left of it place 2. Separate by a curved line. Draw a line underneath. 2 is contained in 2 once. Write 1 under the 2. 2 is contained in 6 three times. Write 3 under the 6. The answer is 13 cents.

79. *The answer in division is called the* **quotient.**

80. Find quotients:

1. $2\overline{)20}$	2. $2\overline{)22}$	3. $2\overline{)24}$	4. $2\overline{)28}$	5. $2\overline{)40}$
6. $2\overline{)62}$	7. $2\overline{)64}$	8. $2\overline{)66}$	9. $2\overline{)68}$	10. $2\overline{)80}$
11. $2\overline{)202}$	12. $2\overline{)204}$	13. $2\overline{)206}$	14. $2\overline{)208}$	15. $2\overline{)220}$
16. $2\overline{)400}$	17. $2\overline{)402}$	18. $2\overline{)406}$	19. $2\overline{)408}$	20. $2\overline{)420}$

81. Sight Exercises.

Give missing numbers:

1. $8+2=?$
2. $8-2=?$
3. $8\times 2=?$
4. $8+2=?$
5. $5\times ?=10$
6. $8+?=4$
7. $3+?=11$
8. $9-?=6$
9. $?\times 2=6$
10. $?+2=5$
11. $6\times ?=12$
12. $?\times 2=8$

13. $\begin{array}{r} 11 \\ +\,? \\ \hline 17 \end{array}$
14. $\begin{array}{r} ? \\ -\,5 \\ \hline 8 \end{array}$
15. $\begin{array}{r} ? \\ \times\,2 \\ \hline 18 \end{array}$
16. $\begin{array}{r} 16 \\ +\,5 \\ \hline ? \end{array}$
17. $\begin{array}{r} 26 \\ +\,5 \\ \hline ? \end{array}$
18. $\begin{array}{r} 11 \\ \times\,2 \\ \hline ? \end{array}$
19. $\begin{array}{r} 13 \\ -\,? \\ \hline 4 \end{array}$
20. $\begin{array}{r} 10 \\ \times\,? \\ \hline 20 \end{array}$
21. $2)\overline{?}$ $\quad 4$
22. $?)\overline{10}$ $\quad 5$
23. $4)\overline{8}$ $\quad ?$
24. $3)\overline{?}$ $\quad 2$

82. Oral Problems.

1. A girl pays 20 cents for a reader, 10 cents for a blank book, and 5 cents for a slate. How much does she spend?

2. A man buys a coat for $9 and sells it for $13. What is his profit?

3. At 4 cents a pint, what will a quart of milk cost?

NOTE. — Have the pupils learn by experiment that there are 2 pints in a quart.

4. If I can buy two marbles for 1 cent, how much do I pay for 6 marbles?

5. What will be the cost of two 11-cent bars of soap?

6. Two boys are talking about their ages. The 13-year-old boy says he is 4 years older than the other. How old is the other?

7. What will be the cost of a pint of syrup, if a quart costs 16 cents?

8. John has 6 marbles, and his brother has 4. How many will John have to give his brother so that both may have the same number?

9. If there are 12 things in a dozen, how many are there in half a dozen?

10. Mary buys a doll for 19 cents and has 6 cents left. How much money did she have at first?

NOTE. — Answers to oral problems should be written on slates or paper, by all pupils, at a given signal.

83. Written Problems.

1. A boy pays 40 cents for a drum and 2 cents for a kite. How many cents does he pay for both?

2. Mr. Jones has $40 in bank. After taking out $2, how much money has he in bank?

3. How much did Mrs. Smith pay for 2 dolls that cost 40 cents each?

4. I paid $40 for rent of my house for 2 months. How much do I pay for one month?

5. A man pays 40 cents for a pound of tea, and sells it for 55 cents. What is his profit?

6. A person uses 60 pints of milk in a month. How many quarts does he use?

7. John has 40 cherries; he gives one-half of them to James. How many cherries does he give James?

8. There are 45 roses on one bush, and 35 on another. How many are there on both.

9. What do I pay for 2 pounds of butter at 32 cents a pound?

10. What will be the cost of half a pound of 60-cent tea?

11. A boy had 66 fire-crackers; he gave one-half of them to his cousin. How many did he give to his cousin?

12. How much shall I pay for 4 straw hats at 22 cents each?

13. How many wings have 21 geese?

14. If there are 24 torpedoes in a pack, how many are there in 2 packs?

15. A girl who is 13 years old is one-half as old as her aunt. How old is her aunt?

16. How many 2-cent stamps can be bought for 48 cents?

NOTATION AND NUMERATION.

84. The largest number we can write with three figures is 999. The next number is one thousand, written 1,000.

Two thousand, 2,000.	Three thousand, 3,000.
Four thousand, 4,000.	Five thousand, 5,000.
Six thousand, 6,000.	Seven thousand, 7,000.
Eight thousand, 8,000.	Nine thousand, 9,000.

One thousand one is written 1,001.

85. Write in figures:

1. One thousand two.
2. Two thousand three.
3. Three thousand four.
4. Four thousand five.
5. Five thousand six.
6. Six thousand eight.
7. Seven thousand nine.
8. Eight thousand ten.

86. Read the following:

1.	1,020	4.	1,100	7.	1,000	10.	1,110	13.	5,555
2.	2,040	5.	9,900	8.	1,010	11.	2,222	14.	7,777
3.	4,050	6.	8,600	9.	1,101	12.	4,444	15.	9,999

87. Write in figures:

1. Three thousand four hundred fifty-six.
2. Seven thousand eighty-four.
3. One thousand ninety-nine.

4. Nine thousand five hundred forty-three.
5. Five thousand seven.
6. Eight thousand eighty-eight.
7. Four thousand seven hundred.
8. Six thousand sixty.
9. Three hundred eleven.
10. Six thousand five hundred forty-three.

88. Read the following:

1. 1,365	7. 4,400	13. 6,525	19. 309
2. 437	8. 9,000	14. 6,182	20. 1,805
3. 234	9. 988	15. 9,760	21. 508
4. 6,676	10. 7,005	16. 2,673	22. 7,001
5. 4,370	11. 75	17. 9,058	23. 3,008
6. 1,054	12. 4,347	18. 1,567	24. 600

89. *The right-hand figure is called the* **units'** *figure, the next is called the* **tens'** *figure, the next is called the* **hundreds'** *figure, the next is called the* **thousands'** *figure.*

90. A comma is generally placed between the thousands' figure and the hundreds' figure.

91. NOTE. — To secure accuracy and rapidity, abstract examples in addition and in subtraction should be worked each day.

92. Written Review.

Find sums:

1. $1{,}406 + 789 + 3{,}008 + 57 + 259 + 80$
2. $954 + 2{,}309 + 16 + 756 + 64 + 1{,}891 + 5$
3. $2{,}345 + 123 + 67 + 8 + 90 + 321 + 5{,}432$
4. $87 + 6 + 430 + 29 + 7{,}856 + 379$
5. $473 + 25 + 389 + 4{,}500 + 98 + 1{,}267 + 18$

93. Find remainders:

6. $8{,}763 - 6{,}549$
7. $3{,}800 - 968$
8. $9{,}000 - 8{,}999$
9. $7{,}654 - 987$
10. $3{,}000 - 2{,}875$
11. $4{,}386 - 2{,}998$

94. Find products:

12. 144×2
13. 613×2
14. $4{,}031 \times 2$
15. $2{,}304 \times 2$
16. 723×2
17. 514×2

95. Find quotients:

18. $288 \div 2$
19. $2{,}468 \div 2$
20. $8{,}062 \div 2$
21. $8{,}624 \div 2$
22. $1{,}028 \div 2$
23. $1{,}446 \div 2$

96. Find products:

1.	2.	3.	4.	5.	6.
12	13	14	15	16	17
2	2	2	2	2	2

97. Find answers:

7. $24 \div 2$ 9. $34 \div 2$ 11. $52 \div 2$

8. $28 \div 2$ 10. 25×2 12. 28×2

98. Find products:

13. 34	14. 35	15. 36	16. 38	17. 39	18. 45
2	2	2	2	2	2
19. 47	20. 54	21. 55	22. 63	23. 66	24. 75
2	2	2	2	2	2

99. Find quotients:

25. $2\overline{)68}$ 26. $2\overline{)70}$ 27. $2\overline{)72}$ 28. $2\overline{)76}$

29. $2\overline{)78}$ 30. $2\overline{)90}$ 31. $2\overline{)94}$ 32. $2\overline{)108}$

33. $2\overline{)110}$ 34. $2\overline{)126}$ 35. $2\overline{)132}$ 36. $2\overline{)150}$

100. Find answers:

37. $210 \div 2$ 40. $252 \div 2$ 43. 308×2

38. 105×2 41. 206×2 44. $816 \div 2$

39. 116×2 42. $612 \div 2$ 45. $298 \div 2$

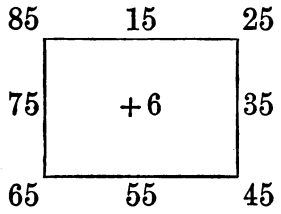
101. Find products:

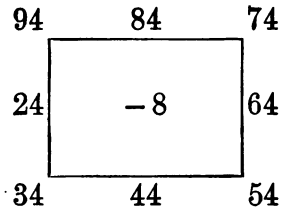
46. 150	47. 155	48. 166	49. 177	50. 188
2	2	2	2	2
51. 680	52. 709	53. 888	54. 999	55. 1,025
2	2	2	2	2

102. Find quotients:

56.	$300 \div 2$	57.	$376 \div 2$	58.	$956 \div 2$	59.	$1{,}776 \div 2$		
60.	$332 \div 2$	61.	$512 \div 2$	62.	$1{,}360 \div 2$	63.	$2{,}050 \div 2$		

103. Drills.





Give frequent practice in drills similar to the foregoing, changing the numbers from time to time.

104. Multiply:

1.	101 × 3	2.	102 × 3	3.	103 × 3	4.	111 × 3	5.	112 × 3
6.	200 × 3	7.	201 × 3	8.	202 × 3	9.	203 × 3	10.	210 × 3
11.	223 × 3	12.	130 × 3	13.	131 × 3	14.	132 × 3	15.	331 × 3
16.	102 × 4	17.	200 × 4	18	201 × 4	19.	202 × 4	20.	111 × 4
21.	222 × 4	22.	101 × 6	23.	201 × 7	24.	211 × 8	25.	111 × 9

105. Divide:

1. $3 \div 3$	2. $9 \div 3$	3. $8 \div 4$
4. $60 \div 3$	5. $33 \div 3$	6. $39 \div 3$
7. $93 \div 3$	8. $66 \div 3$	9. $69 \div 3$
10. $40 \div 4$	11. $44 \div 4$	12. $84 \div 4$
13. $303 \div 3$	14. $336 \div 3$	15. $963 \div 3$
16. $390 \div 3$	17. $400 \div 4$	18. $884 \div 4$
19. $100 \div 5$	20. $180 \div 9$	21. $126 \div 6$
22. $1{,}680 \div 8$	23. $1{,}005 \div 5$	24. $1{,}212 \div 6$
25. $1{,}818 \div 9$	26. $1{,}407 \div 7$	27. $1{,}010 \div 5$

106. Oral Problems.

1. If one-half pound of raisins costs 8 cents, what is the price of a pound?

2. A boy had an apple, and he ate one-quarter of it. How much had he left?

3. William had 8 marbles and lost one-fourth of them. How many did he lose?

4. A confectioner sold 4 boxes of candy. How many pounds did he sell, if each box held a quarter of a pound?

5. How much does a half pound of candy cost, if a quarter pound costs 5 cents?

6. How much must be paid for 9 pounds of meal at 2 cents a pound?

7. If oil is 8 cents a gallon, how many gallons can I buy for 16 cents?

8. I paid 7 cents for one cake, and 7 cents for another, and 7 cents for another. How much did I pay for three cakes?

9. How many feet have 10 ducks?

10. A watch costs 75 dollars, and the chain costs 5 dollars. What is the cost of both?

107. Written Problems.

1. If there are 11 trees in one row, how many trees are there in 9 rows?

2. When flour is 4 cents a pound, how many pounds can I buy for 44 cents?

3. A man earns 22 dollars a week. How much does he earn in 3 weeks?

4. How many oranges in 4 dozen?

5. A grocer had 90 eggs. How many would he have after selling a dozen?

6. If a half pound of tea costs 30 cents, what will one pound cost?

7. There are 48 boys in the second class; one-quarter of them have a wrong answer to a problem. How many have a wrong answer?

8. Mary has 21 postage stamps. Julia has four times as many. How many has Julia?

9. A newsboy sold papers for 75 cents and gained 19 cents. How much did the papers cost?

10. How many feet have 20 cows?

MULTIPLICATION BY 3.

108. Oral Exercises.

What is the cost of 3 postal cards? 3 two-cent stamps? 3 three-cent tops? 3 pints of milk at 4 cents a pint? 3 five-cent base-balls? 3 pounds of sugar at six cents a pound? 3 seven-cent dolls? 3 quarts of milk at eight cents a quart? 3 yards of muslin at nine cents a yard?

109. Sight Exercises.

Give answers:

2×9	6×3	0×9	3×6	5×1	9×2
2×4	1×9	3×8	2×5	6×0	4×3
8×2	5×3	7×3	3×9	1×6	4×0
3×2	0×2	1×5	7×2	1×7	9×3
3×0	4×1	2×3	7×1	6×1	1×3

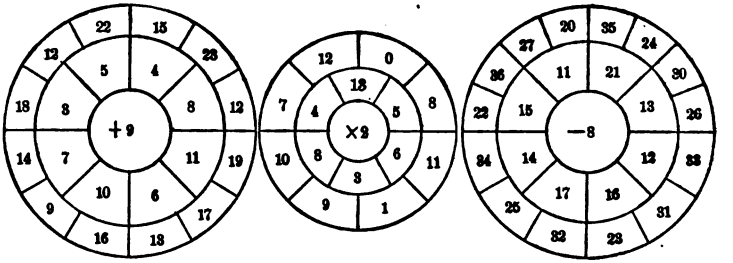
EXERCISE IN ADDITION.

110. Change, from time to time, the figure in the second line:

5	15	25	35	45	55	65	75
+6			(Add 7, 8, 9)				
6	16	26	36	46	56	66	76
+5			(Add 6, 7, 8, 9)				
7	17	27	37	47	57	67	77
+4			(Add 5, 6, 7, 8, 9)				

111. Drills.

Drill upon the following, changing, from time to time, the numbers in the inmost circles:



The teacher places the pointer on a number in one of the two outer spaces, and the pupil combines it with the one in the inmost circle.

112. NOTE. — Insist upon rapidity in answers. Have *short* daily drills if possible.

113. Written Exercises.

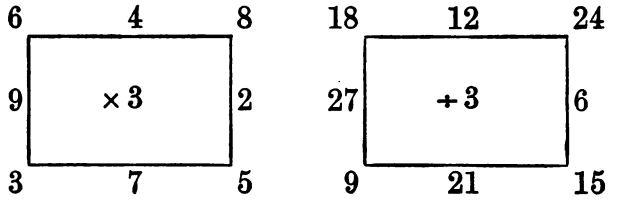
Multiply:

1.	63	2.	84	3.	168	4.	126	5.	37
	3		3		3		3		3
6.	324	7.	543	8.	568	9.	230	10.	621
	3		3		3		3		2
11.	246	12.	331	13.	320	14.	157	15.	628
	3		4		5		3		3
16.	2,627	17.	2,514	18.	2,332	19.	1,203	20.	4,583
	3		3		4		6		2

21. 1,210 × 8	22. 1,203 × 4	23. 2,233 × 7	24. 3,261 × 3	25. 1,986 × 3
26. 2,879 × 3	27. 2,887 × 2	28. 1,023 × 9	29. 2,428 × 3	30. 2,937 × 3

DIVISION BY 3.

114. Drills.



115. Slate Exercises.

Divide the following numbers by 2; by 3.

1. 144	2. 300	3. 276	4. 408	5. 192
6. 396	7. 312	8. 336	9. 204	10. 324
11. 384	12. 1,188	13. 4,116	14. 3,012	15. 7,776

116. Written Exercises.—Review.

Find sums:

1. $4,632 + 936 + 788 + 39 + 888 + 6 + 25 + 999.$
2. $2,004 + 678 + 59 + 384 + 90 + 1,508 + 77.$
3. $5 + 38 + 957 + 1,836 + 2,793 + 858 + 99 + 4.$
4. $287 + 1,085 + 329 + 5,908 + 672 + 84 + 93.$
5. $64 + 317 + 290 + 4,926 + 3,007 + 215.$

117. Find differences:

NOTE. — The smaller number (the *subtrahend*) must be taken from the larger number (the *minuend*).

1. 9,000 and 8,743.
2. 7,327 and 9,004.
3. 6,326 and 5,749.
4. 3,520 and 2,780.
5. 383 and 500.
6. 8,888 and 9,200.
7. 1,711 and 1,682.
8. 333 and 1,212.
9. 27 and 2,700.
10. 4,837 and 2,958.

118. Oral Problems.

1. There are 3 rows of desks in the schoolroom, and 9 desks in each row. How many desks are there in the room?

2. If there are 16 ounces in a pound, how many ounces are there in half a pound?

3. A storekeeper sold 15 hats Monday, 9 on Tuesday, 7 Wednesday, 10 Thursday. How many did he sell in four days?

4. A woman has 18 yards of silk. She uses 5 yards. How many yards has she left?

5. At 3 for a cent, how many marbles can be bought for 6 cents?

6. What will be the cost of a pint of maple syrup if a quart is worth 22 cents?

7. There are 4 quarts in a gallon. How many pints are there in a gallon?

8. How many feet have 12 ducks?

9. If a 12-cent pie is divided into 3 equal pieces, what is each piece worth?

10. John is 9 years old, and Mary is 16. What is the difference between their ages?

119. Written Problems.

1. Mary weighs 36 pounds, and Sarah weighs 55 pounds. How much do both weigh?

2. What is the difference between their weights?

3. A confectioner sells ice-cream for 80 cents a half gallon. What is the price of a quart?

4. At 3 for a cent, what will be the cost of 48 marbles?

5. How much must I pay for 4 sheep that cost $13 each?

6. I buy 27 cents' worth of groceries, and give the storekeeper a 50-cent piece. How much change should I receive?

7. What will be the cost of a pound of 60-cent tea and 25 cents' worth of eggs?

8. A bag of flour contains 49 pounds. How many pounds of flour are there in 2 bags?

9. If meal costs 2 cents a pound, how many pounds can I buy for 50 cents?

10. If you divide 54 marbles equally among 3 boys, how many will each receive?

120. Written Exercises.

Multiply:

1. 123 × 5	2. 213 × 6	3. 312 × 7	4. 321 × 8	5. 132 × 9
6. 111 × 5	7. 222 × 6	8. 333 × 7	9. 122 × 8	10. 133 × 9

121. Divide —

By 5:

1. 660	2. 1,665	3. 1,160	4. 1,115

By 6:

5. 732	6. 1,218	7. 1,872	8. 612

By 7:

9. 2,331	10. 2,324	11. 2,254	12. 721

By 8:

13. 1,704	14. 1,848	15. 888	16. 1,864

By 9:

17. 1,188	18. 1,827	19. 2,898	20. 2,097

MULTIPLICATION BY 4.

122. Oral Exercises.

What will 4 pints of milk cost at 4 cents a pint? 4 five-cent base-balls? 4 pounds of sugar at 6 cents a pound? 4 seven-cent dolls? 4 quarts of milk at 8 cents a quart? 4 yards of muslin at 9 cents a yard?

123. Sight Exercises.

Give answers:

4×9	4×6	4×8	4×7	4×5
2×9	2×8	2×7	2×6	2×5
3×5	3×6	3×7	3×8	3×9
5×4	6×4	7×4	8×4	9×4

124. Written Exercises.

Multiply:

1. 873 × 4	2. 456 × 4	3. 659 × 4	4. 175 × 4	5. 999 × 2
6. 324 × 5	7. 1,369 × 4	8. 2,468 × 4	9. 1,876 × 4	10. 1,775 × 4
11. 2,084 × 4	12. 2,167 × 4	13. 2,299 × 4	14. 2,308 × 4	15. 1,323 × 6
16. 2,579 × 3	17. 4,987 × 2	18. 3,065 × 3	19. 1,888 × 4	20. 1,203 × 6
21. 3,287 × 3	22. 1,340 × 6	23. 1,044 × 8	24. 1,243 × 7	25. 342 × 9

DIVISION BY 4.

125. Written Exercises. Divide by 4:

1. 1,876	6. 7,836	11. 5,916	16. 3,716
2. 3,572	7. 5,696	12. 7,324	17. 1,992
3. 8,368	8. 3,504	13. 9,024	18. 3,408
4. 7,704	9. 1,732	14. 7,164	19. 5,760
5. 9,864	10. 3,176	15. 5,024	20. 7,004

126. Review.

Divide by 5:

1. 2,150	2. 2,020	3. 6,170	4. 6,710

By 6:

5. 8,466	6. 8,652	7. 7,872	8. 8,418

By 7:

9. 9,114	10. 8,428	11. 9,338	12. 9,170

By 8:

13. 9,920	14. 8,824	15. 9,632	16. 3,544

By 9:

17. 2,736	18. 3,618	19. 9,306	20. 9,936

127. Add:

1. $3,478 + 384 + 965 + 29 + 450 + 1,873 + 685$
2. $2,476 + 1,259 + 2,647 + 309 + 875 + 33 + 8$
3. $589 + 847 + 1,634 + 2,801 + 689 + 2,256$
4. $632 + 583 + 238 + 289 + 1,586 + 37 + 9$
5. $1,438 + 567 + 36 + 9 + 57 + 486 + 4,008$

128. Find differences between:

1. 9,000 and 8,790
2. 8,006 and 7,999
3. 6,543 and 9,001
4. 4,350 and 2,670
5. 8,493 and 8,530
6. 7,654 and 6,789

129. Oral Problems.

1. How many balls are there in 4 roman candles, each containing 8 balls?

2. There are 27 boys in the first division and 10 in the second division. How many are there in both?

3. A boy works 9 examples a day. How many does he work in 4 days?

4. What will be paid for one-fourth of a yard of ribbon at 40 cents a yard?

5. A man walks 28 miles in 7 hours. How many miles does he walk in 1 hour?

6. What will be the cost of 8 yards of cloth at $4 per yard?

7. A boy found 4 marbles and then had 32. How many had he at first?

8. John paid 36 cents for a book and 4 cents for a slate. How many cents did he pay for both?

9. Mary had 18 jackstones. How many had she after giving 3 to Jane?

10. Harry is 8 years old. In how many years will he be 12?

130. Written Problems.

1. If 4 marbles are sold for 1 cent, how much will 8 marbles cost? How much will 88 cost?

2. A boy bought 3 readers. He paid 15 cents for one, 16 cents for another, 17 cents for another. How many cents did he pay for the three?

3. What will 3 readers cost at 16 cents each?

4. There are 24 hours in a day. How many hours are there in 4 days?

5. A boy paid 80 cents for 4 pounds of candy. How much did it cost a pound?

6. A farmer has 96 cows in three stables, the same number in each. How many are there in each stable?

7. How much shall I have to pay for 2 suits of clothes at $35 each?

8. There were 90 sheep in a flock; 14 of them died. How many were in the flock then?

9. How many pounds of butter are there in 2 tubs, each containing 48 pounds?

10. Two boys weigh together 120 pounds. One of them weighs 56 pounds. How much does the other weigh?

MULTIPLICATION BY 5.

131. Oral Exercises.

What is the cost of 5 five-cent base-balls? Of 5 pounds of sugar at six cents a pound? Of 5 seven-cent dolls? 5 quarts of milk at eight cents a quart? 5 yards of muslin at nine cents a yard?

132. Written Exercises.

Multiply by 5:

1. 27	8. 456	15. 1,395	22. 1,627
2. 44	9. 699	16. 1,467	23. 1,672
3. 63	10. 859	17. 1,408	24. 1,709
4. 85	11. 1,057	18. 1,483	25. 1,740
5. 105	12. 1,285	19. 1,596	26. 1,820
6. 148	13. 1,263	20. 1,539	27. 1,895
7. 287	14. 1,338	21. 1,698	28. 1,830

By 6:

29. 1,504	30. 1,423	31. 1,250	32. 1,354

By 7:

33. 1,405	34. 1,425	35. 1,235	36. 1,043

By 8:

37. 1,205	38. 1,125	39. 1,235	40. 1,143

By 9:

41. 1,054	42. 1,032	43. 1,105	44. 1,025

DIVISION BY 5.

133. Written Exercises.

Divide by 5:

1. 600	5. 1,120	9. 1,945	13. 2,855
2. 700	6. 1,360	10. 2,265	14. 3,060
3. 875	7. 1,510	11. 2,485	15. 4,070
4. 920	8. 1,770	12. 2,600	16. 5,385

Divide by 4:

17. 7,324	18. 8,712	19. 9,996	20. 9,780

By 6:

21. 8,124	22. 7,500	23. 8,538	24. 9,024

By 7:

25. 9,835	26. 9,975	27. 8,645	28. 7,301

By 8:

29. 9,000	30. 8,424	31. 9,144	32. 9,640

By 9:

33. 9,225	34. 9,945	35. 9,288	36. 9,486

134. United States Money.

In writing dollars and cents, the dollar sign, $, is written first, followed by the number of dollars; then comes a period (decimal point) and the number of cents.

Three dollars and fifty cents is written,	$3.50
Eighteen dollars and sixty-seven cents,	$18.67
Twenty-four dollars,	$24.00
Six dollars and eight cents,	$6.08
Twenty-five cents,	$.25
Three cents,	$.03

Twenty-five cents may also be written 25¢; three cents may be written 3¢.

The abbreviations *ct.* and *cts.* are sometimes used; thus, 1 ct., 9 cts.

135. Written Exercises.

Add:

1.	2.	3.	4.	5.
$13.57	$20.68	$3.69	$.48	$.17
8.69	12.56	41.36	2.15	.28
.31 89	9.99	3.40	.67	3.49
2.15 88	.55	10.65	3.85	16.55
30.70 25	6.37	9.87	42.30	4.70
9.58 6	26.58	.63	6.85	23.69
.39	.25	.50	18.46	.58

NOTE. — In adding long columns, the total of each column may be placed alongside, as in example 1. As a rule, however, no unnecessary figures should be written.

136. Find differences between:

1. $84.00 and $73.17.
2. $69.50 and $90.40.
3. $24.00 and $8.63.
4. $21.52 and $.76.
5. $2.79 and $27.90.
6. $8.38 and $91.11.

137. Oral Problems.

1. There are 5 rows of trees, 9 trees in each row. How many trees are there in all?

2. How many ounces of candy are there in 8 boxes, each containing 4 ounces?

3. There are 50 pages in a book. Sarah has read all but 5 pages. How many pages has she read?

4. Mr. Smith is 40 years old; his wife is 5 years younger. How old is Mrs. Smith?

5. William is 8 years old; his brother Stephen is 16 years older. How old is Stephen?

6. A woman paid 48 cents for 4 pounds of cheese. How much did one pound cost?

7. There are 45 gallons of oil in a barrel. How many gallons will there be in it after 10 are sold?

8. A girl wrote 50 words. She spelled 5 incorrectly. How many did she spell correctly?

9. How much will a dozen five-cent oranges cost?

10. A train goes a mile in 2 minutes. How many miles will it go in 26 minutes?

138. Written Problems.

1. There are 5 houses in a row, and each house has 16 windows. How many windows are there in all?

2. A man buys a cow for $90. How many $5 bills will pay for the cow?

3. Harry has 3 twenty-five-cent pieces in his bank. How much money has he?

4. If a girl went to school 21 days each month for 4 months, how many days would she attend school?

5. 90 boys belong to a certain school; 15 are absent. How many are present?

6. At 2 for a cent, how much will 48 peaches cost?

7. Henry, Jane, and Thomas had 27 marbles each. How many marbles did the three children have?

8. A man divided 60 cherries equally among 4 boys. How many did each receive?

9. If we spell 15 minutes a day, how many minutes do we spell in a week of 5 days?

10. A woman bought a $5 shawl, and gave the storekeeper a $100 bill. How much change did she receive?

FRACTIONAL PARTS.

139. Preliminary Exercises.

What is one-half of 2? Of 4? Of 8? Of 18? Of 20? Of 24?

140. One-half is written $\frac{1}{2}$. To find $\frac{1}{2}$ of a number, divide the number by 2.

141. Written Exercises.

1. $\frac{1}{2}$ of 36 = ?
2. $\frac{1}{2}$ of 72 = ?
3. $\frac{1}{2}$ of 50 = ?
4. $\frac{1}{2}$ of 100 = ?

5. If a dollar contains 100 cents, how many cents are there in one-fourth of a dollar? $\frac{1}{4}$ of 100 cents = 100 cents ÷ 4.

142. One-fourth is written $\frac{1}{4}$. One-third, $\frac{1}{3}$. One-fifth, $\frac{1}{5}$.

6. What is $\frac{1}{4}$ of 80? Find $\frac{1}{4}$ of 60.

To find $\frac{1}{3}$, $\frac{1}{5}$, etc., of a number, divide by 3, 5, etc.

143. Oral Exercises.

What is $\frac{1}{3}$ of 3? Of 6? Of 12? Of 18? Of 21? Of 27? Of 30? Of 36?

Find $\frac{1}{4}$ of 4. Of 8. Of 16. Of 24. Of 28. Of 36. Of 40. Of 48.

What is $\frac{1}{5}$ of 10? $\frac{1}{6}$ of 18? $\frac{1}{3}$ of 33?

144. Written Exercises.

Find $\frac{1}{2}$ of each of the following. Find $\frac{1}{3}$. Find $\frac{1}{4}$.

1. 96	4. 192	7. 348	10. 912
2. 72	5. 576	8. 360	11. 864
3. 60	6. 156	9. 276	12. 720

ROMAN NOTATION.

145. In the Roman notation, letters are used.

I = 1 V = 5 X = 10

146. The numbers from 1 to 10 are written as follows:

1	2	3	4	5	6	7	8	9	10
I	II	III	IV	V	VI	VII	VIII	IX	X

Placing X in succession before each of the foregoing gives the numbers from 11 to 20.

XI = 11 XII = 12

147. Write in Roman numerals:

13 14 15 16 17 18 19 20

148. Read the following:

XXI XXIII XXV XXVII XXIX
XXII XXIV XXVI XXVIII XXX

149. Write in Roman numerals:

31 32 33 34 35 36 37 38 39

L stands for 50 XL = 40

150. Read the following:

XLI XLIII XLV XLVII XLIX
XLII XLIV XLVI XLVIII

151. Write in Roman numerals:

51 52 53 54 55 56 57 58 59

60 = LX 70 = ? 80 = ?

152. Read:

LXI LXXIV LXXXIX LV XXXIX XXIV LIII LIX

100 = C 90 = XC

153. Read:

XCI XCIX XCII XCIII XCVI
XCIV XCVIII XCV XCVII

154. Write in Roman numerals:

25 48 63 52 74 98 37 29 14 89 34 47 99

155. Liquid Measure.

2 pints (*pt.*) = 1 quart (*qt.*).
4 quarts = 1 gallon (*gal.*).

NOTE. — The measures themselves should be brought into the classroom, and should be handled by the children. As many as possible of the pupils should verify the table by filling the gallon measure with water, using the quart; etc.


1 Gill


1 Pint


1 Quart

1 Gallon

156. Oral Problems.

1. How many weeks are there in 35 days?

2. A man had 10 pounds of raisins. How many pounds had he after selling one-half pound?

3. A family uses a gallon of milk a day. How many quarts does the family use in 7 days?

4. When milk is 8 cents a quart, what is the price of a gallon?

5. When oil is 8 cents a gallon, how much does a quart cost?

6. A boy had 2 pies, which he cut into fourths. How many pieces did he make?

7. How many quarter dollars are there in 5 dollars?

8. John's father gave him a half-pound box of candy, and his aunt gave him a quarter-pound. How much candy did he have then?

9. If 9 fire-crackers are sold for 1 cent, how many can a boy get for 5 cents?

10. A storekeeper receives 45 cents for 9 balls. What does he charge apiece for them?

11. Louis has 9 pigeons; Henry has four times as many. How many has Henry?

12. How many marbles does Mr. Smith need to buy to give 11 to each of his 4 boys?

13. A mechanic earns $24 per week of 6 days. What wages does he receive for a day's work?

14. A farmer has 4 horses, 27 cows, and 10 pigs. How many animals does he own?

15. A girl spent 9 cents for ribbon. If she had 30 cents at first, how much money had she left?

157. Written Problems.

1. A farmer paid 15 dollars for a calf, and paid for a cow 20 dollars more than he paid for the calf. How many dollars did he pay for both?

2. Mr. Jones raised 90 tons of hay. He sold 65 tons, and his horses ate 10 tons. How many tons had he left?

3. William sold 8 dozen eggs. How many eggs did he sell?

4. Ellen has 5 cents left after spending 50 cents for a doll and 20 cents for a work-box. How much money had she at first?

5. A grocer charged 16 cents for a half pound of butter. What was the cost of a pound?

6. If it takes 4 horses to draw 1 cannon, how many horses will be needed to draw 24 cannons?

7. A street-car conductor collected 85 cents in one trip. How many people were in the car, if each paid 5 cents?

8. Find the cost of $7\frac{1}{2}$ pounds of currants at 10 cents a pound.

9. When tea is 80 cents a pound, how much do I pay for a half pound and a quarter of a pound?

10. Sarah buys a reader for 25 cents, a slate for 12 cents, and a copy book for 10 cents. How much change does she get out of a half-dollar?

11. How many 7-dollar suits can be bought for 84 dollars?

12. Mrs. Brown buys a sideboard for $\$25$, a table for $\$15$, and 6 chairs at $\$2$ each. How much money does she spend?

13. A farmer has in his orchard 3 rows of peach trees, 2 rows of cherry trees, and 4 rows of apple trees. How many trees has he in the orchard if there are 11 trees in each row?

14. There are 24 boys in each class. How many boys are there in 3 classes?

15. I spent 68 cents for dry goods, and have 22 cents left. How much money had I at first?

16. There are 90 eggs in a box. How many will be left after 5 dozen are sold?

17. Our reader has 87 pages. We read 45 pages last month, and 30 pages so far this month. How many pages have we yet to read?

18. James has 10 marbles, Thomas has 5 more than James, Edward has 5 more than Thomas. How many marbles have the three boys?

19. A fruit dealer has 8 dozen oranges. How many oranges will he have after he sells 3 dozen?

20. How many days are there in April, May, and June?

CHAPTER III.

MULTIPLICATION AND DIVISION. — OUNCE AND POUND. — TWO OPERATIONS. — HALVES, THIRDS, FOURTHS. — MULTIPLICATION BY A MIXED NUMBER.

MULTIPLICATION BY 6.

158. Oral Exercises.

What is the cost of 6 pounds of sugar at six cents a pound? Of 6 seven-cent dolls? Of 6 quarts of milk at eight cents a quart? Of 6 yards of muslin at nine cents a yard?

159. Learn the following tables:

2 times 1 are 2	2 times 7 are 14
2 " 2 " 4	2 " 8 " 16
2 " 3 " 6	2 " 9 " 18
2 " 4 " 8	2 " 10 " 20
2 " 5 " 10	2 " 11 " 22
2 " 6 " 12	2 " 12 " 24

3 times 1 are 3	3 times 7 are 21
3 " 2 " 6	3 " 8 " 24
3 " 3 " 9	3 " 9 " 27
3 " 4 " 12	3 " 10 " 30
3 " 5 " 15	3 " 11 " 33
3 " 6 " 18	3 " 12 " 36

4 times 1 are 4	4 times 7 are 28
4 " 2 " 8	4 " 8 " 32
4 " 3 " 12	4 " 9 " 36
4 " 4 " 16	4 " 10 " 40
4 " 5 " 20	4 " 11 " 44
4 " 6 " 24	4 " 12 " 48

5 times 1 are 5	5 times 7 are 35
5 " 2 " 10	5 " 8 " 40
5 " 3 " 15	5 " 9 " 45
5 " 4 " 20	5 " 10 " 50
5 " 5 " 25	5 " 11 " 55
5 " 6 " 30	5 " 12 " 60

6 times 1 are 6	6 times 7 are 42
6 " 2 " 12	6 " 8 " 48
6 " 3 " 18	6 " 9 " 54
6 " 4 " 24	6 " 10 " 60
6 " 5 " 30	6 " 11 " 66
6 " 6 " 36	6 " 12 " 72

160. Oral Exercises.

Give answers:

3×5	11×3	5×12	11×5	9×4
4×5	11×6	10×6	3×9	3×6
8×5	6×6	7×3	9×2	6×8
5×11	2×12	8×3	4×9	6×5
9×3	4×3	5×8	9×5	12×6
2×8	9×6	5×7	12×4	3×3
4×11	11×4	6×12	12×2	8×4

161. Written Exercises.

Multiply by 6:

1. 1,643	5. 280	9. 728	13. 1,632	17. 1,095
2. 807	6. 1,123	10. 764	14. 998	18. 1,049
3. 1,605	7. 1,308	11. 1,566	15. 1,268	19. 1,630
4. 358	8. 1,660	12. 1,348	16. 1,612	20. 1,320

162. Oral Exercises.

Give quotients:

11)22	12)36	11)44	10)30	9)18	8)16
9)36	10)40	11)33	12)48	11)55	10)20
9)9	8)48	7)35	6)66	5)60	4)44
7)21	8)32	9)54	10)50	11)11	12)24

DIVISION BY 6.

163. Written Exercises.

Divide by 6:

1.	1,728	7.	3,348	13.	5,814	19.	8,574
2.	1,314	8.	3,726	14.	6,936	20.	8,790
3.	1,926	9.	4,536	15.	6,234	21.	9,240
4.	2,790	10.	4,644	16.	7,002	22.	9,426
5.	2,574	11.	5,016	17.	7,512	23.	9,636
6.	3,006	12.	5,910	18.	7,956	24.	7,500

164. Oral Exercises.

Give missing numbers:

$9 \times ? = 54$	$? \times 5 = 40$	$16 \div ? = 8$
$? - 6 = 19$	$? + 7 = 25$	$? \div 3 = 9$
$24 - ? = 15$	$12 \times 3 = ?$	$32 \div 4 = ?$

165. Original Problems.

Make problems containing the following numbers:

$20+8+7+5$ $19-4$ 12×5

$28\div4$ 5×6 $20\div2$

166. Written Exercises.—Review.

Add:

1. 1,792; 816; 54; 937; 208; 4,007; 19.
2. 357; 20; 9; 64; 583; 6,086; 444; 37.
3. 2,095; 5; 678; 23; 418; 96; 177; 3,456.
4. 1,876; 783; 275; 954; 783; 666; 2,854; 1,009.
5. 8; 75; 466; 4,308; 275; 54; 9; 83; 507.

167. Find differences between:

6. 684 and 1,079.
7. 7,311 and 4,198.
8. 4,000 and 2,500.
9. 6,473 and 5,876.
10. 2,763 and 4,087.
11. 9 and 9,000.
12. 3,000 and 13.
13. 8,000 and 7,999.

168. Oral Problems.

1. Spent 75 cents for a book, and 10 cents for a slate. How much was paid for both?

2. If a girl pays one cent for 5 jackstones, how many cents would she pay for 25 jackstones?

3. A pound of butter costs 24 cents. How much will $\frac{1}{4}$ pound cost?

4. If $\frac{1}{2}$ pound of sugar costs 3 cents, what is the price of a pound?

5. At $5 per ton, how many dollars must be paid for 6 tons of coal?

6. How many feet have 12 cows?

7. If 24 children, at a party, eat $\frac{1}{2}$ pint of ice-cream each, how many pints will they all eat?

8. How many oranges are there in a box containing 5 dozen?

9. A woman pays $18 for material for a dress, and $6 for making it. How much does the dress cost?

10. I pay 10 cents for $\frac{1}{4}$ pound of candy. How much do I pay for $\frac{1}{2}$ pound?

169. Written Problems.

1. Find the cost of 6 coats at $15 each.

2. If 6 marbles are sold for one cent, how much will a boy pay for 84 marbles?

3. What is the price of a half yard of lace when a yard costs 90 cents?

4. At 6 cents a pound, how many pounds of sugar can you buy for 96 cents?

5. What will be the cost of 3 base-balls at 25 cents each?

6. A storekeeper sells marbles at 13 for a cent. How many marbles can be bought for 5 cents?

7. At 3 for a cent, how many cents should I pay for 99 slate-pencils?

8. If there are 24 hours in a day, how many hours are there in 3 days?

9. John has 136 postage-stamps, and William has 4. How many have they together?

10. By selling a ball for 75 cents, I lost 5 cents. What did it cost me?

11. What will be the cost of 6 cans of corn at 13 cents a can?

12. How many pounds of 4-cent flour can be bought for 64 cents?

13. Harry learns to spell 14 words a day. How many does he learn in 5 days?

14. How many quarts are there in 18 gallons?

15. How many quarts are there in 64 pints?

16. A girl goes to school 5 hours a day. How many minutes does she attend school, as there are 60 minutes in an hour?

17. There are 4 classes in a school, and 24 pupils in each class. How many pupils are there?

18. What will be the cost of 2 dolls at 49 cents each?

19. Paid 48 cents for 3 yards of cambric. What was the price of 1 yard?

20. A boy sold some newspapers for 50 cents; he made 25 cents profit. What did the papers cost him?

21. A Noah's ark contains 15 animals. How many animals in 6 Noah's arks?

22. A train went 96 miles in 3 hours. How many miles did it go in one hour?

23. Fifty pupils belong to a certain class; 13 are absent. How many are present?

24. On Friday there were 68 pupils present in school, and 12 absent. How many pupils belong to the school?

25. Eighty children attend a picnic; each one eats one-half pint of ice-cream. How many pints are eaten?

26. How many quarts are there in 90 pints?

27. What would be the cost of 6 bicycles at $13 each?

28. A circus owner paid $92 for 4 monkeys. How much apiece did they cost?

29. The fare on a certain railroad is 3 cents a mile. How many miles can I ride for 96 cents?

30. A street-car conductor receives 5 cents fare from each passenger. How many passengers has he if he receives 75 cents for fares?

QUOTIENTS AND REMAINDERS.

170. Divide 13 by 2.

The dividend 13 contains the divisor 2, 6 times with 1 remainder. The remainder is written over the divisor. The answer is read six and one-half.

$$2\overline{)13}\quad 6\tfrac{1}{2}$$

Divide 27 by 4.

The quotient is 6, and the remainder is 3. The answer is $6\frac{3}{4}$, read six and three-fourths.

In like manner $42 \div 5 = 8\frac{2}{5}$; $67 \div 6 = 11\frac{1}{6}$.

171. Written Exercises.

Find answers:

1.	$87 \div 2$	8.	$370 \div 9$	15.	$8{,}761 \div 3$
2.	$415 \div 6$	9.	$567 \div 11$	16.	$6{,}833 \div 5$
3.	$954 \div 5$	10.	$1{,}354 \div 11$	17.	$4{,}238 \div 7$
4.	$295 \div 3$	11.	$1{,}200 \div 9$	18.	$4{,}555 \div 9$
5.	$809 \div 6$	12.	$1{,}416 \div 7$	19.	$3{,}367 \div 11$
6.	$370 \div 3$	13.	$4{,}976 \div 5$	20.	$5{,}611 \div 11$
7.	$359 \div 7$	14.	$6{,}872 \div 3$	21.	$3{,}803 \div 9$

MULTIPLICATION BY A MIXED NUMBER.

172. *A mixed number* is an integer and a fraction written together.

Give answers:

$\frac{1}{2}$ of 24	$\frac{1}{4}$ of 24	$\frac{3}{4}$ of 24	$\frac{1}{3}$ of 24
$\frac{2}{3}$ of 24	$\frac{1}{6}$ of 24	$\frac{5}{6}$ of 24	$\frac{1}{8}$ of 24
$24 \times 2\frac{1}{2}$	$24 \times 1\frac{1}{4}$	$24 \times 1\frac{1}{3}$	$24 \times 1\frac{1}{8}$
$12 \times 2\frac{1}{2}$	$12 \times 2\frac{1}{4}$	$12 \times 2\frac{1}{3}$	$12 \times 2\frac{1}{6}$

173. Written Exercises.

Find $\frac{2}{3}$ of 39.

Since $\frac{1}{3}$ of 39 is 13, $\frac{2}{3}$ of 39 is 2 times 13, or 26.

$3\overline{)39}$
13
$\times 2$
26 *Ans.*

Find answers:

1. $\frac{2}{3}$ of 48
2. $\frac{3}{4}$ of 48
3. $\frac{5}{6}$ of 72
4. $\frac{2}{5}$ of 75
5. $\frac{3}{5}$ of 55
6. $\frac{4}{5}$ of 60

174. Multiply 48 by $1\frac{1}{3}$.

First find $\frac{1}{3}$ of 48, which is 16. This is $48 \times \frac{1}{3}$. Under this place 48. The sum, 64, is $1\frac{1}{3}$ times 48.

48
$1\frac{1}{3}$
16
48
64 *Ans.*

Find products:

1. $51 \times 1\frac{1}{3}$
2. $56 \times 1\frac{1}{4}$
3. $75 \times 1\frac{1}{5}$
4. $64 \times 1\frac{1}{2}$
5. $48 \times 1\frac{1}{2}$
6. $72 \times 1\frac{1}{3}$
7. $64 \times 1\frac{1}{4}$
8. $60 \times 1\frac{1}{5}$
9. $72 \times 1\frac{1}{6}$

175. Multiply 48 by $2\frac{1}{3}$.

First multiply by $\frac{1}{3}$, as above. Then multiply by 2, placing the product under the product by $\frac{1}{3}$. Add the two products.

$$\begin{array}{r} 48 \\ 2\frac{1}{3} \\ \hline 16 \\ 96 \\ \hline 112 \end{array} \quad \textit{Ans.}$$

Find products:

1. $120 \times 1\frac{1}{5}$
2. $120 \times 2\frac{1}{4}$
3. $120 \times 3\frac{1}{3}$
4. $120 \times 4\frac{1}{2}$
5. $120 \times 5\frac{1}{6}$
6. $120 \times 6\frac{1}{5}$
7. $120 \times 7\frac{1}{4}$
8. $120 \times 8\frac{1}{3}$
9. $120 \times 9\frac{1}{2}$

176. Oral Problems.

1. I bought 6 pounds of 5-cent sugar and gave the storekeeper 50 cents. How much change should I receive?

2. How much must be paid for a 10-cent doll, and $\frac{1}{2}$ yard of damask at 40 cents a yard?

3. If two oranges cost 6 cents, how many cents will 5 cost?

4. What do I pay for a gallon of milk at the rate of 3 cents a pint?

5. Find the cost of three-fourths of a yard of 8-cent muslin.

6. A boy had 25 cents. He spent 10 cents for a base-ball. How many 5-cent bats can he buy with the rest of his money?

7. What will $3\frac{1}{2}$ yards of 6-cent muslin cost?

8. Sarah buys two 12-cent goblets and a yard of 9-cent ribbon. How much money does she pay for all?

9. If there are 16 ounces in a pound, how many ounces are there in three-fourths of a pound?

10. When butter is 24 cents a pound, what part of a pound can be bought for 6 cents?

177. Written Problems.

1. Bought 4 yards of cambric at 13 cents a yard. How much change do I receive if I give the clerk 75 cents?

2. What would be the cost of $\frac{1}{2}$ pound of 70-cent tea and 25 cents' worth of eggs?

3. If 2 colts cost $26, how many dollars should I pay for 5 colts?

4. What would be the price of a gallon of ice-cream at the rate of 12 cents a pint?

5. Find the cost of $\frac{3}{4}$ of a pound of 60-cent tea.

6. A man has $90. He buys a cow for $45. How many sheep at $5 each can he buy for the remainder of his money?

7. What will $3\frac{1}{2}$ yards of lace cost at 24 cents a yard?

8. Mary buys 6 goblets at 13 cents each and a yard of silesia for 15 cents. How much money does she pay for all?

178. There are 16 ounces in a pound. Write ounce, *oz.*; pound, *lb.*

9. How many ounces are there in $2\frac{1}{4}$ pounds?

NOTATION AND NUMERATION.

179. Write one thousand in figures. Nine thousand. Ten thousand. Eleven thousand. Twelve thousand. Thirteen thousand. Twenty thousand. Thirty thousand. Forty-one thousand. Fifty-two thousand. Sixty-three thousand. Seventy-four thousand. Eighty-five thousand. Ninety-six thousand.

180. Read the following:

97,000	56,789	60,706	11,010	10,100
10,000	84,000	67,890	70,007	10,111
56,789	11,110	10,010	65,000	89,000
78,003	88,502	15,480	17,901	40,893
CLXXVI	XCIX	XLVIII	XXXIV	LXXXVII

181. Write:

Forty-seven thousand eight hundred sixteen.
Eleven thousand eleven.
Four thousand four.
Ninety thousand nine.
Sixty-two thousand sixty-two.
Forty-five thousand eight hundred ten.
Ninety-nine thousand nine hundred ninety-nine.
Four hundred seven.
Eighty-three thousand six hundred eighty.
Fifty thousand five hundred five.

182. Read the following:

77,481	4,084	36,073	8,000	26,789
49,137	18,765	50,008	6,040	5,678
7,009	79	19,109	89,364	3,709
54,020	95,687	45,606	90,500	40,002
2,244	45,000	80,020	8,964	71,435
20,000	25,045	63,817	72,000	5,031
30,087	62,990	17,717	25,020	30,200

183. Add across. Add down.

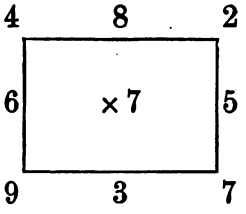
1 +	3 +	7 +	8 +	4 +	2 = ?
20 +	40 +	70 +	90 +	30 +	50 = ?
300 +	500 +	800 +	200 +	600 +	400 = ?
4,000 +	6,000 +	5,000 +	7,000 +	8,000 +	1,000 = ?
10,000 +	10,000 +	10,000 +	10,000 +	10,000 +	10,000 = ?
? +	? +	? +	? +	? +	? = ?

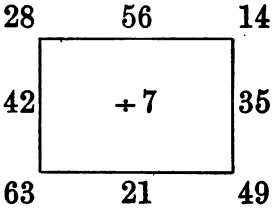
Add down.	Subtract across.
9 – 6 = ?	7 – 4 = ?
70 – 30 = ?	80 – 20 = ?
800 – 200 = ?	900 – 300 = ?
9,000 – 1,000 = ?	6,000 – 2,000 = ?
40,000 – 10,000 = ?	50,000 – 40,000 = ?
? – ? = ?	? – ? = ?

MULTIPLICATION AND DIVISION BY 7.

184. Make table of 7's. Learn it.

185. Drills.





186. Written Exercises.

Multiply by 7:

1.	14	6.	26	11.	95	16.	1,016	21.	11,076
2.	17	7.	35	12.	608	17.	3,006	22.	13,960
3.	24	8.	45	13.	422	18.	5,309	23.	10,628
4.	205	9.	54	14.	625	19.	7,123	24.	11,675
5.	409	10.	70	15.	276	20.	9,321	25.	10,999

187. Written Exercises.

Divide by 7:

1.	91	6.	189	11.	469	16.	4,382	21.	63,861
2.	147	7.	252	12.	588	17.	1,960	22.	87,556
3.	175	8.	322	13.	651	18.	16,247	23.	96,439
4.	714	9.	378	14.	3,556	19.	28,196	24.	62,062
5.	2,142	10.	3,563	15.	2,975	20.	50,491	25.	88,088

188. Find answers:

NOTE.—$\frac{98}{7}$ means 98 divided by 7.

1.	$7\overline{)849}$	6.	$\frac{98}{7}$	11.	$600 \div 7$	16.	$\frac{1}{7}$ of 273
2.	$6\overline{)849}$	7.	$\frac{96}{6}$	12.	$509 \div 6$	17.	$\frac{1}{6}$ of 432
3.	$5\overline{)849}$	8.	$\frac{95}{5}$	13.	$609 \div 5$	18.	$\frac{1}{5}$ of 865
4.	$4\overline{)849}$	9.	$\frac{96}{4}$	14.	$607 \div 4$	19.	$\frac{1}{4}$ of 728
5.	$3\overline{)849}$	10.	$\frac{97}{2}$	15.	$307 \div 3$	20.	$\frac{1}{3}$ of 861

189. Multiply by 8:

1.	2,460	2.	3,571	3.	6,052	4.	3,565

By 9:

5.	1,507	6.	2,306	7.	3,754	8.	4,625

By 10:

9. 3,571 10. 1,346 11. 2,456 12. 2,301

By 11:

13. 1,304 14. 2,460 15. 3,507 16. 4,321

By 12:

17. 2,030 18. 3,151 19. 4,263 20. 5,174

190. Divide by 8:

1. 24,327 2. 50,005 3. 30,063 4. 28,569

By 9:

5. 32,140 6. 12,119 7. 22,102 8. 20,710

By 10:

9. 24,327 10. 30,063 11. 26,579 12. 37,543

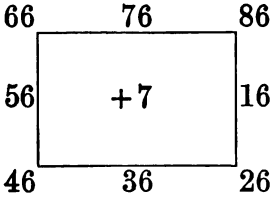
By 11:

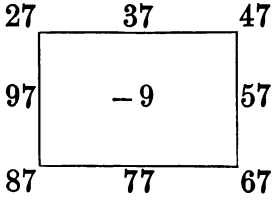
13. 28,347 14. 25,345 15. 26,800 16. 38,577

By 12:

17. 24,361 18. 48,731 19. 37,812 20. 51,157

191. Drills.





192. Add:

1.	2.	3.	4.
$610.05	$24.60	$487.31	$164.75
67.89	150.78	78.12	23.46
8.97	35.71	51.57	35.07
6.78	413.04	4.36	121.19
37.09	31.51	.67	300.63
14.35	42.63	25.34	65.79
50.31	5.74	106.83	74.35
2.00	85.69	57.50	8.04
.93	.77	3.87	10.60

5. 347 + 8,865 + 24,795 + 9,876 + 4,050 + 16,984 + 6,395 + 10,034 + 1,776 + 235.

6. 13,275 + 9,083 + 22,659 + 3,876 + 248 + 1,207 + 14,307 + 2,369.

193. Find differences between:

1. 90,876 and 89,967.
2. 84,378 and 90,000.
3. 36,599 and 36,700.
4. 54,283 and 25,179.
5. 17,246 and 83,111.
6. $900.00 and 30 cents.
7. $9.16 and $916.00.
8. $1,234.50 and $3.75.

194. Oral Problems.

1. What will be the cost of a 10-cent piece of soap, and 7 pounds of cheese at 11 cents a pound?

2. Forty-eight quarts are how many gallons?

3. How much will be paid for 12 yards of gingham at 7 cents a yard?

4. If 2 spools of thread cost 10 cents, what will 10 spools cost?

5. What must I pay for $1\frac{1}{2}$ yards of 24-cent ribbon?

6. There are 12 months in a year. How many months are there in $3\frac{1}{4}$ years?

7. How many ounces are there in 1 pound 9 ounces?

8. At 48 cents a gallon, what will be the cost of a pint of molasses?

9. A farmer's wife had 60 eggs. How many dozen did she have?

10. What is the cost of $\frac{3}{4}$ of a yard of serge at 40 cents a yard?

195. Written Problems.

1. What will 7 bushels of wheat weigh, if there are 60 pounds in 1 bushel?

2. Find the weight of 8 bushels of corn, if a bushel of corn weighs 56 pounds.

3. $750 are paid for 5 horses. How much does 1 horse cost?

4. A man buys a box containing 30 dozen oranges. How many oranges are there in the box?

5. A box contains 60 lemons. If one-fourth of them are bad, how many good ones are there in the box?

6. What will be the cost of $5\frac{1}{2}$ yards of gingham at 18 cents a yard?

7. 280 pupils attend a certain school. If one-seventh of them are absent, how many pupils are present?

8. How many gallons are there in 320 pints?

9. How many ounces are there in 3 pounds 4 ounces?

196. Oral Exercises.

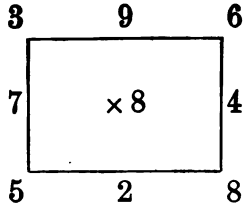
Give answers:

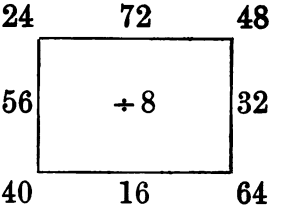
8×3	7×4	5×9	6×7	8×5
5×7	12×4	10×5	8×6	9×7
8×7	6×8	9×6	5×8	4×9
12×5	4×8	7×7	12×3	11×7
$16 \div 8$	$48 \div 4$	$25 \div 5$	$48 \div 8$	$84 \div 7$
$66 \div 6$	$56 \div 8$	$54 \div 6$	$16 \div 8$	$49 \div 7$
$40 \div 8$	$60 \div 10$	$36 \div 3$	$40 \div 5$	$72 \div 6$

MULTIPLICATION AND DIVISION BY 8.

Make table of 8's. Learn it.

197 Drills.





198. Written Exercises.

Multiply by 8:

1. 13	6. 33	11. 38	16. 407	21. 5,167
2. 15	7. 41	12. 56	17. 613	22. 7,568
3. 21	8. 52	13. 74	18. 821	23. 9,067
4. 23	9. 73	14. 92	19. 1,050	24. 10,234
5. 25	10. 91	15. 203	20. 3,456	25. 11,507

199. Oral Exercises.

Give answers:

$\frac{24}{8}$	$\frac{35}{7}$	$\frac{63}{9}$	$\frac{72}{6}$	$\frac{77}{7}$
$40 \div 8$	$63 \div 7$	$81 \div 9$	$72 \div 8$	$64 \div 8$
$6\overline{)44}$	$9\overline{)27}$	$8\overline{)56}$	$7\overline{)84}$	$5\overline{)60}$
$9\overline{)45}$	$2\overline{)25}$	$3\overline{)32}$	$4\overline{)45}$	$5\overline{)44}$
$6\overline{)37}$	$7\overline{)53}$	$8\overline{)59}$	$9\overline{)50}$	$9\overline{)70}$

200. Written Exercises.

Divide by 8:

1. 104	6. 184	11. 376	16. 808	21. 5,736
2. 112	7. 192	12. 448	17. 1,624	22. 6,568
3. 120	8. 200	13. 520	18. 2,440	23. 7,480
4. 160	9. 248	14. 592	19. 3,256	24. 8,400
5. 168	10. 232	15. 664	20. 4,072	25. 17,080

201. Oral Problems.

1. If 2 oranges cost 6 cents, what shall I pay for 8 oranges?

2. What will 8 pairs of shoes cost at $4 per pair?

3. A farmer had 39 sheep in one flock, 8 in another, and 10 in another. How many sheep had he in all?

4. Ellen gathered 11 quarts of berries, Mary gathered 2 quarts less than Ellen. How many did both gather?

5. Frank's aunt gave him 50 cents. He gave 10 cents for a slate, and spent the rest for lead-pencils at 5 cents each. How many pencils did he buy?

6. What will be the fare for 11 boys at 3 cents each?

7. There are 46 maple trees in a park, 10 pine trees, and 9 oaks. How many trees are there in the park?

8. A man bought a wagon for $35. He spent $10 fixing it. What would he gain by selling it for $50?

9. A grocer bought 36 eggs at $\frac{3}{4}$ of a cent apiece. How many cents did the eggs cost him?

10. Jane had 48 cents; her mother gave her 10 cents, and she spent 50 cents. How much money had she left?

11. How many dollars will be paid for 2 barrels of flour, at $5\frac{1}{2}$ a barrel?

12. A dealer bought coal for $4.50 per ton, and sold it for $5. How much did he gain?

13. There are two stables with 14 horses in each. How many horses are there in both?

14. If $\frac{1}{2}$ a pound of sugar costs 3 cents, what will be the cost of 5 pounds?

15. If 96 marbles are divided equally among 8 boys, how many does each receive?

202. Written Problems.

1. If 2 pounds of raisins cost 26 cents, what will be the cost of 7 pounds?

2. What will 8 overcoats cost at $15 each?

3. A drover bought 39 oxen from one man, 48 from a second, and 59 from a third. How many oxen did he buy?

4. Mr. Lane sold 45 bushels of apples; his neighbor sold 10 bushels less. How many bushels did both sell?

5. A boy went to the store with 90 cents. He bought a pound of lard for 22 cents, and spent the rest for flour at 4 cents a pound. How many pounds of flour did he buy?

6. What will be the fare for 34 boys at 3 cents each?

7. There are 24 maple trees in a park, and 26 more chestnut trees than maples. How many are there of both kinds?

8. A man bought an ox for $37. After spending $23 in feeding it, he sold the ox for $78. What was his profit?

9. Find the cost of $4\frac{1}{8}$ pounds of coffee at 24 cents a pound.

10. A merchant had $48\frac{1}{2}$ yards of calico. He sold $35\frac{1}{2}$ yards, and bought 52 yards. How many yards had he then?

11. What will 2 yards of ribbon cost at $16\frac{1}{2}$ cents a yard?

12. How much profit is made on an article that costs $\$3.75$ and is sold for $\$5$?

13. How many pints are there in 42 quarts 1 pint?

14. A storekeeper received $\$1.40$ for 4 pounds of butter. What was the price per pound?

15. How many ounces are there in $5\frac{1}{4}$ pounds?

16. How many ounces are there in 5 pounds 4 ounces?

17. When tea sells for 5 cents an ounce, how much does one-fourth of a pound cost?

18. A dealer bought 20 quarts of milk at 16 cents a gallon. How much did he pay for it?

19. What will 3 dozen lemons cost at 2 cents each?

20. If 8 pounds of sugar cost 48 cents, what will be the price of a half pound?

21. A farmer has 92 acres in 4 fields of equal size. How many acres are there in 3 fields?

22. A storekeeper had 24 hammers. He sold one-fourth of them at 15 cents each. What did he receive for them?

23. Mr. Day had 84 sheep. He kept 70 of them, and sold the remainder at $7 apiece. How much did he get for the ones he sold?

24. How many quarts in a barrel of oil that holds 45 gallons?

25. There are 24 hours in a day. How many hours are there in a week?

26. A farmer has 16 cows in one stable and three times as many in another stable. How many cows has he in both stables?

27. How many boxes holding 8 ounces each will 5 pounds of candy fill?

MULTIPLICATION BY 9.

203. Make table of 9's. Learn it.

204. Written Exercises.

Multiply by 9:

1.	13	6.	34	11.	39	16.	832	21.	6,018
2.	15	7.	41	12.	55	17.	1,051	22.	7,685
3.	21	8.	54	13.	73	18.	3,465	23.	9,067
4.	23	9.	75	14.	92	19.	4,216	24.	11,067
5.	25	10.	93	15.	204	20.	5,025	25.	10,523

DIVISION BY 9.

205. Written Exercises.

Divide by 9:

1. 126	5. 279	9. 720	13. 747	17. 6,453
2. 180	6. 315	10. 261	14. 909	18. 8,415
3. 198	7. 387	11. 423	15. 2,745	19. 19,125
4. 216	8. 549	12. 585	16. 4,581	20. 65,214

206. Divide by 8. By 9.

1. 140	3. 482	5. 804	7. 627
2. 361	4. 777	6. 405	8. 375

207. Oral Problems.

1. William has 10 marbles, Edward has 5 more than William. How many marbles have both boys?

2. James spent 50 cents for a ball, and 30 cents for bats. How much did he spend?

3. If candy is 40 cents a pound, what will $\frac{3}{4}$ pound cost?

4. If $\frac{1}{4}$ pound tea costs 20 cents, what will be the cost of $\frac{1}{2}$ pound?

5. If 3 peaches cost 9 cents, how many peaches can I buy for 15 cents?

6. Three-quarters of a pound of butter costs 24 cents; how many cents does one-quarter of a pound cost?

7. A boy has in his bank a quarter, a dime, a half-dime, a 3-cent piece, a 2-cent piece, and a cent. How much money has he?

8. What part of a pie will be left after three children have each received one-fourth of it?

9. What will be the cost of 1 quart 1 pint of ice-cream, at 20 cents a pint?

10. How many cents will 1 ounce of cloves cost at 40 cents for $\frac{1}{2}$ pound?

11. A farmer has two cows and a calf. One cow gives 10 quarts of milk a day, the other gives 12 quarts; but the calf drinks 8. How many quarts a day has the farmer to sell?

12. How many half-pints in a quart of ice-cream?

13. A boy takes 75 cents to the store to get 25 cents' worth of eggs, and the remainder in 5-cent sugar. How many pounds of sugar does he get?

14. A farmer brings to the store 4 dozen eggs worth 20 cents a dozen. How many yards of 8-cent muslin can he buy for the money?

15. What will be the cost of $3\frac{1}{2}$ pounds of flour at 4 cents a pound, and $\frac{1}{2}$ pound of butter at 20 cents a pound?

208. Written Problems.

1. How many tons of coal at $5 a ton can be bought for $200?

2. A milkman sells 8 cans of milk a day, each can holding 10 gallons. How many quarts does he sell?

3. A merchant takes in $18 on Monday; on Tuesday, $3 less; on Wednesday, as much as on Monday and Tuesday together. How many dollars does he take in during the three days?

4. A man buys horses at $100 each, and sells them at $120 each. What is his profit on 4 horses?

5. There are 2 floors in a school building, and 4 rooms on each floor. How many pupils are in the school if there are 40 in each room?

6. How much will 4 dozen eggs cost at 2 cents for each egg?

7. There are 24 hours in one day. How many hours are there in 9 days?

8. A newsboy sold 23 papers at 3 cents each, and 30 at 1 cent each. How much money did he get for them?

9. There are 16 ounces in 1 pound. How many ounces are there in 9 pounds?

10. A man earns $100 per month and spends $75 per month. How much money will he save in 3 months?

11. Find the sum of 36 and 45; subtract from it 65; multiply the remainder by 6; divide the product by 8. What is the quotient?

12. What will be the cost of $2\frac{1}{4}$ yards dress goods at 32 cents per yard?

13. How many dollars will a woman pay for 6 pairs of shoes at $3 per pair, and a coat at $12?

14. A man sells 7 sofas at $14 each. If they cost him $75, what is his profit?

15. A man has 90 cents. He gives $\frac{1}{3}$ of it to his wife. The remainder he divides equally among 4 children. How many cents does each child receive?

REVIEW.

209. Add:

1.	2.	3.	4.	5.
34,216	84,657	378	64,027	9
1,579	2,070	4,154	3,589	81
381	3,889	1,765	4,706	630
4,006	573	28,309	520	1,284
25,718	28	6,524	1,879	15,408
6,285	6	893	20,006	6,275
946	57	25,065	3,845	497
57	1,065	84	217	62

210. Find answers:

1.	2.	3.	4.
80,000	−13,398	75,191	−89,688
−57,059	27,684	−74,909	90,235

211. Oral Exercises.

1. $\frac{2}{7}$ of 14	6. $\frac{3}{4}$ of 40	11. $\frac{1}{8}$ of 80	16. $\frac{2}{9}$ of 54
2. $\frac{3}{7}$ of 21	7. $\frac{2}{3}$ of 60	12. $\frac{3}{8}$ of 16	17. $\frac{4}{9}$ of 45
3. $\frac{4}{7}$ of 28	8. $\frac{4}{5}$ of 60	13. $\frac{5}{8}$ of 24	18. $\frac{5}{9}$ of 36
4. $\frac{5}{7}$ of 35	9. $\frac{2}{5}$ of 55	14. $\frac{7}{8}$ of 32	19. $\frac{7}{9}$ of 27
5. $\frac{6}{7}$ of 77	10. $\frac{5}{6}$ of 72	15. $\frac{1}{9}$ of 63	20. $\frac{8}{9}$ of 18

212. Written Exercises.

1.	$\frac{2}{7}$ of 98	6.	$28 \times 1\frac{1}{7}$	11.	$28 \times 6\frac{1}{7}$	16.	$600 \times 7\frac{1}{6}$
2.	$\frac{3}{7}$ of 105	7.	$28 \times 2\frac{1}{7}$	12.	$24 \times 9\frac{1}{2}$	17.	$276 \times 2\frac{1}{2}$
3.	$\frac{4}{7}$ of 112	8.	$28 \times 3\frac{1}{7}$	13.	$36 \times 8\frac{1}{3}$	18.	$888 \times 3\frac{1}{4}$
4.	$\frac{5}{7}$ of 119	9.	$28 \times 4\frac{1}{7}$	14.	$84 \times 3\frac{1}{4}$	19.	$999 \times 4\frac{1}{3}$
5.	$\frac{6}{7}$ of 126	10.	$28 \times 5\frac{1}{7}$	15.	$100 \times 4\frac{1}{5}$	20.	$555 \times 2\frac{1}{5}$

MULTIPLICATION BY 10.

$10 \times 6 = ?$ $10 \times 7 = ?$ $10 \times 9 = ?$

213. What is the last figure of each product? If we multiply 3 by 10, what figure do we join to the 3? When 5 is multiplied by 10, what figure is joined to the 5?

214. Oral Exercises.

10×10	11×10	12×10	13×10
14×10	15×10	17×10	20×10
25×10	37×10	49×10	55×10
63×10	72×10	81×10	99×10

DIVISION BY 10.

215. When we divide 90 by 10, what is the quotient? What figure of the dividend is dropped in the answer?

216. Oral Exercises.

$80 \div 10$	$100 \div 10$	$120 \div 10$	$160 \div 10$
$190 \div 10$	$240 \div 10$	$300 \div 10$	$360 \div 10$
$490 \div 10$	$450 \div 10$	$510 \div 10$	$620 \div 10$
$790 \div 10$	$870 \div 10$	$960 \div 10$	$1{,}000 \div 10$

SPECIAL DRILLS.

217. Give sums:

$50+30$	$20+60$	$50+40$	$40+50$	$30+60$
$70+20$	$30+30$	$30+20$	$60+20$	$40+20$
$20+40$	$20+70$	$20+50$	$40+40$	$50+20$
$40+30$	$60+30$	$30+40$	$30+50$	$20+30$

218. Give remainders:

$90-50$	$50-20$	$80-40$	$50-30$	$90-70$
$80-30$	$80-60$	$70-30$	$90-40$	$80-50$
$40-20$	$70-20$	$60-40$	$60-20$	$70-40$
$60-30$	$90-30$	$90-60$	$70-50$	$90-20$

219. Give products:

20×2	3×30	20×4	$\frac{1}{3}\times 90$	20×3
2×30	20×3	$\frac{1}{2}\times 60$	$80\times \frac{1}{2}$	$\frac{1}{2}\times 40$
30×3	2×40	$80\times \frac{1}{4}$	3×20	2×20
4×20	30×2	40×2	$\frac{1}{2}\times 80$	$90\times \frac{1}{3}$

220. Give results:

$40\div 2$	$90\div 30$	$80\div 4$	$\frac{1}{2}$ of 60	$40\div 20$
$60\div 30$	$60\div 3$	$\frac{1}{3}$ of 60	$60\div 20$	$\frac{1}{3}$ of 90
$90\div 3$	$80\div 40$	$80\div 2$	$\frac{1}{2}$ of 40	$\frac{3}{4}$ of 40
$80\div 20$	$60\div 2$	$\frac{1}{4}$ of 80	$\frac{2}{3}$ of 30	$\frac{1}{2}$ of 80

221. Give results:

$\frac{1}{2}+\frac{1}{2}$	$1-\frac{1}{2}$	$4\times\frac{1}{2}$	$1\div\frac{1}{2}$	$1\div\frac{1}{4}$
$1\frac{1}{2}+\frac{1}{2}$	$2-\frac{1}{2}$	$\frac{1}{2}\times 10$	$2\div\frac{1}{2}$	$\frac{1}{2}\div\frac{1}{4}$
$2\frac{1}{2}+\frac{1}{2}$	$5-\frac{1}{2}$	$20\times\frac{1}{2}$	$5\div\frac{1}{2}$	$2\div\frac{1}{4}$
$5\frac{1}{2}+\frac{1}{2}$	$10-\frac{1}{2}$	$\frac{1}{2}\times 40$	$10\div\frac{1}{2}$	$3\div\frac{1}{3}$

222. Oral Problems.

1. What will be the cost of 3 pounds of coffee at 30¢ per pound?

2. There are 100 cents in a dollar. How many cents in $\frac{1}{5}$ of a dollar?

3. What shall I pay for 4 readers at 20 cents each?

4. A boy pays 50 cents for a pair of skates and 20 cents for a pound of candy. How much money does he spend?

5. What will be the price of $\frac{1}{4}$ pound of 80-cent tea?

6. Find the cost of $\frac{1}{2}$ yard of silk at 60¢ per yard.

7. A storekeeper sells 80 marbles for 20 cents. How many does he sell for 1 cent?

8. There are seats for 40 pupils in 1 classroom. For how many pupils are there seats in 2 rooms?

9. A man bought 3 pounds of 20-cent coffee. How much did he pay for it?

10. How many ounces in 10 pounds?

11. How many quarts in 80 gallons?

12. The pupils of a certain class solve 20 problems each day. How many do they solve in 5 days?

13. A farmer had 90 sheep. How many did he have after selling 50 sheep?

14. A family uses 3 quarts of milk a day. How many quarts are used in a month of 30 days?

DIVISION BY 10.

223. $19 \div 10 = 1\frac{9}{10}$. $27 \div 10 = ?$ $33 \div 10 = ?$

Notice the remainder.

$101 \div 10 = ?$ $113 \div 10 = ?$ $127 \div 10 = ?$

What figure of the dividend is the same as the remainder?

224. Oral Exercises.

$87 \div 10$	$103 \div 10$	$127 \div 10$	$161 \div 10$
$192 \div 10$	$249 \div 10$	$301 \div 10$	$363 \div 10$
$402 \div 10$	$490 \div 10$	$515 \div 10$	$626 \div 10$
$697 \div 10$	$718 \div 10$	$823 \div 10$	$998 \div 10$

REVIEW.

225. Written Exercises.

Add:

1.	2.	3.	4.
$186.54	$493.05	$936.84	$1,925.84
43.79	27.56	27.00	600.03
287.60	8.32	18.95	285.92
.65	.95	.38	67.15
9.83	.04	6.22	496.88
354.00	1.18	25.80	37.23
2.93	23.59	47.11	4,286.84
12.08	186.18	164.08	.99

5. Two hundred eighty-seven dollars and sixteen cents; ninety-four dollars and ten cents; four thousand two hundred seventy-eight dollars and five cents; sev-

enty-three thousand six hundred twenty-nine dollars; eight thousand eight dollars and eight cents; ninety-nine cents; twenty-five dollars eleven cents; four cents.

226. Subtract:

6.	7.	8.
$198.50	$200.00	$600.00
29.86	83.07	.07

9.	10.
$361.82	$983.27
279.93	486.00

11. From nine hundred sixty-two dollars and eighty-four cents take five hundred seventy-six dollars and seventy-six cents.

12. Find the difference between eight hundred four dollars and ninety-three cents and nine hundred dollars.

13. From ninety-nine dollars take ninety-nine cents.

14. I paid eighty-four dollars and twenty cents for some tea, and sold it for one hundred five dollars and fifteen cents. What was my profit?

15. Find the difference between six hundred seventy-five dollars and eighty-nine cents and four hundred eighteen dollars and ninety-eight cents.

227. Multiply:

16.	17.	18.
$1.65	$22.75	$101.50
8	6	4

19.	20.
$83.75	$29.63
5	7

228. Divide:

21. 3)$29.70	23. 5)$191.75	25. 7)$130.13
22. 4)$86.00	24. 6)$240.78	26. 8)$902.00

229. Oral Problems.

1. What will a boy pay for a 60-cent pair of skates and a 30-cent pair of gloves?

2. Henrietta bought 3 yards of dress goods at 30 cents per yard. What was the amount of her bill?

3. A girl has 20 cents in her bank. How many more cents must she get to have half a dollar?

4. What will be the cost of a 50-cent ball and three 10-cent bats?

5. How many packs of fire-crackers at 4 cents each can be bought for 80 cents?

6. John received 30 cents from his father and 20 cents from his mother. How many base-balls at 10 cents each can he buy with the money?

7. Mary has 60 cents. Jane has 20 cents less. How many cents has Jane?

8. If 3 pounds of coffee cost 90 cents, what will be the cost of 1 pound?

9. How many pounds of tea at 40 cents a pound can a person buy for 80 cents?

10. How much cloth worth a dollar a yard can be bought for 25 cents?

230. Written Problems.

1. Find the cost of 4 barrels of flour at $5.50 per barrel.

2. If 3 yards of silk cost $7.50, what is the price of a yard?

3. Divide $18.60 among 12 persons, giving each the same amount.

4. A man gave 6 boys 10 cents each and had 25 cents remaining. What had he at first?

5. How much change from a dollar bill will a person receive who buys 5 yards of lace at 17¢ per yard?

6. If I pay 90 cents for 3 yards of linen, what must I pay for $1\frac{1}{2}$ yards?

7. A man had 96 chestnuts. He divided one-half of them equally among his three children. How many did each receive?

8. If 6 dozen eggs cost $1.44, what is the price of 1 dozen? Of 1 egg?

9. A man earns $2.50 per day, and spends $2.10. How much will he save in 2 days?

10. What will be the cost of $1\frac{3}{4}$ yards of ribbon at 40 cents per yard?

11. If a boarding-house uses 4 gallons of milk a day, how many quarts are used in 7 days?

12. A farmer has 16 ducks. He has twice as many hens. How many has he of both?

231. Written Exercises.

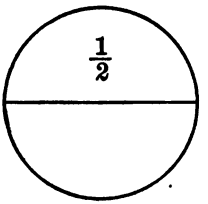
Multiply:

1. $84 \times 4\frac{1}{2}$
2. $96 \times 5\frac{1}{6}$
3. $120 \times 6\frac{1}{5}$
4. $119 \times 9\frac{1}{7}$
5. $522 \times 4\frac{1}{6}$
6. $576 \times 2\frac{1}{12}$
7. $576 \times 7\frac{1}{8}$
8. $252 \times 3\frac{1}{4}$
9. $125 \times 6\frac{1}{5}$
10. $180 \times 12\frac{1}{9}$
11. $480 \times 11\frac{1}{8}$
12. $121 \times 11\frac{1}{11}$

HALVES.

232. Oral Exercises.

Add:



1 half pie + 1 half pie

$\$\frac{1}{2} + \$\frac{1}{2}$. $1\frac{1}{2}$ pt. + $\frac{1}{2}$ pt.

$\frac{1}{2}$ lb. + $\frac{1}{2}$ lb. + $\frac{1}{2}$ lb.

$2\frac{1}{2}$ oz. + $\frac{1}{2}$ oz. $2\frac{1}{2}$ yd. + 1 yd.

$2\frac{1}{2}$ feet	$2\frac{1}{2}$ qt.	$2\frac{1}{2}$ gal.	$3\frac{1}{2}$	$5\frac{1}{2}$
2 feet	$1\frac{1}{2}$ qt.	$2\frac{1}{2}$ gal.	$2\frac{1}{2}$	$1\frac{1}{2}$
$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$
$\frac{1}{2}$	$1\frac{1}{2}$	$4\frac{1}{2}$	$1\frac{1}{2}$	3

233. Written Exercises.

Add:

1. $13\frac{1}{2} + 4\frac{1}{2}$
2. $36\frac{1}{2} + 8\frac{1}{2}$
3. $17\frac{1}{2} + 29 + 4\frac{1}{2}$
4. $25 + 25\frac{1}{2} + 25$
5. $21 + 32\frac{1}{2} + 3$
6. $13\frac{1}{2} + 26 + 47$

234. Find missing numbers:

1.	2.	3.	4.	5.
$25\frac{1}{2}$ + ___ = $49\frac{1}{2}$	34 + ___ = $68\frac{1}{2}$	$9\frac{1}{2}$ + ___ = 10	$8\frac{1}{2}$ + ___ = 10	$27\frac{1}{2}$ + ___ = 30

235. Subtract:

1.	2.	3.	4.	5.
$49\frac{1}{2}$ − $25\frac{1}{2}$	$68\frac{1}{2}$ − 34	10 − $9\frac{1}{2}$	10 − $8\frac{1}{2}$	30 − $27\frac{1}{2}$

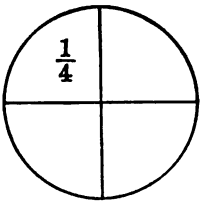
6.	7.	8.	9.	10.
10 − $5\frac{1}{2}$	25 − $6\frac{1}{2}$	32 − $18\frac{1}{2}$	54 − $50\frac{1}{2}$	75 − $74\frac{1}{2}$

FOURTHS.

236. Oral Exercises.

How many fourths in a pie? How many quarters in a dollar? How many fourths in half a pie? $\frac{2}{4} = 1$ what?

$\frac{1}{4}$ pie + $\frac{1}{4}$ pie = what? $\$\frac{1}{4} + \$\frac{1}{4} + \$\frac{1}{4}$ = how many fourths? $\frac{3}{4}$ lb. + $\frac{1}{4}$ lb. = what?



$2\frac{1}{4}$ pint + $\frac{1}{4}$ pint $1\frac{3}{4}$ yard + $\frac{1}{4}$ yard $\$\frac{1}{4} + \$\frac{1}{4} + \$\frac{1}{4} + \$\frac{1}{4}$

$2\frac{3}{4}$	$2\frac{3}{4}$	$4\frac{1}{4}$	$6\frac{1}{4}$	$3\frac{1}{4}$	$7\frac{1}{4}$	$6\frac{3}{4}$
+ 2	+ $1\frac{1}{4}$	+ $2\frac{1}{4}$	+ 9	+ $5\frac{3}{4}$	+ $8\frac{1}{4}$	$6\frac{3}{4}$


+

=

+ ? $\frac{6}{4} = ?$

237. Written Exercises.

Add:

1. $1\frac{1}{4}$	2. $2\frac{3}{4}$	3. $2\frac{1}{4}$	4. $1\frac{1}{4}$	5. $4\frac{3}{4}$
2	3	$12\frac{1}{4}$	$2\frac{3}{4}$	5
$8\frac{1}{4}$	$4\frac{1}{4}$	2	3	$4\frac{3}{4}$
6. $\frac{3}{4}$	7. $1\frac{3}{4}$	8. $27\frac{3}{4}$	9. $84\frac{3}{4}$	10. $67\frac{1}{4}$
$\frac{3}{4}$	$1\frac{3}{4}$	$19\frac{1}{4}$	$14\frac{3}{4}$	$25\frac{1}{4}$

Find missing numbers:

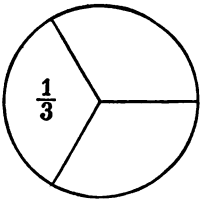
1. $13\frac{1}{4}$ + ___ = $26\frac{1}{4}$	2. 15 + ___ = $30\frac{1}{4}$	3. $18\frac{1}{4}$ + ___ = 19	4. $24\frac{3}{4}$ + ___ = 25	5. $8\frac{3}{4}$ + ___ = 10
6. $6\frac{1}{4}$ + ___ = $6\frac{1}{2}$	7. $7\frac{1}{4}$ + ___ = $7\frac{3}{4}$	8. $5\frac{1}{4}$ + ___ = 7	9. $23\frac{1}{4}$ + ___ = $25\frac{1}{2}$	10. $28\frac{3}{4}$ + ___ = 30

238. Subtract:

1. $46\frac{1}{4}$	2. $40\frac{1}{4}$	3. 20	4. 30	5. $25\frac{3}{4}$
$23\frac{1}{4}$	20	$10\frac{1}{4}$	$15\frac{3}{4}$	$15\frac{1}{4}$
6. $9\frac{1}{2}$	7. $17\frac{3}{4}$	8. $84\frac{3}{4}$	9. $48\frac{3}{4}$	10. 46
$6\frac{1}{4}$	$15\frac{1}{2}$	60	$19\frac{3}{4}$	$17\frac{1}{4}$

THIRDS.

239. Oral Exercises.



When a thing is divided into three equal parts, what is each part called? Draw a square and divide it into thirds. How many thirds in 2 pies? In 3 pies?

$\frac{1}{3}$ foot + $\frac{1}{3}$ foot = ? $\frac{1}{3}$ yard + $\frac{1}{3}$ yard + $\frac{1}{3}$ yard = ?

$\frac{2}{3}$ year + $\frac{1}{3}$ year = ? $\frac{2}{3}$ month + $\frac{2}{3}$ month = ?

$2\frac{1}{3}$	$3\frac{2}{3}$	$4\frac{1}{3}$	$5\frac{2}{3}$	$7\frac{2}{3}$
$+3$	$+6$	$+4\frac{1}{3}$	$+1\frac{1}{3}$	$+1\frac{2}{3}$

$\frac{4}{3}$ = ?

240. Written Exercises.

Add:

1. $43\frac{1}{3}$	2. $59\frac{2}{3}$	3. $63\frac{2}{3}$	4. $48\frac{2}{3}$	5. $39\frac{1}{3}$
$30\frac{1}{3}$	$10\frac{1}{3}$	$4\frac{2}{3}$	15	$5\frac{2}{3}$
6. $27\frac{1}{3}$	7. $6\frac{2}{3}$	8. $18\frac{1}{3}$	9. $\frac{2}{3}$	10. 49
$5\frac{1}{3}$	$3\frac{2}{3}$	$4\frac{2}{3}$	$4\frac{1}{3}$	$3\frac{2}{3}$
3	5	7	11	$\frac{1}{3}$

Find missing numbers:

1.	2.	3.	4.	5.
$8\frac{2}{3}$	$5\frac{1}{3}$	$6\frac{2}{3}$	$7\frac{1}{3}$	$4\frac{1}{3}$
$+$ ___	$+$ ___	$+$ ___	$+$ ___	$+$ ___
$10\frac{2}{3}$	$10\frac{1}{3}$	10	$10\frac{2}{3}$	10

241. Subtract:

1.	2.	3.	4.	5.
$25\frac{2}{3}$	26	$26\frac{2}{3}$	26	$26\frac{1}{3}$
$16\frac{2}{3}$	$16\frac{2}{3}$	16	$16\frac{1}{3}$	$16\frac{1}{3}$

6.	7.	8.	9.	10.
$84\frac{2}{3}$	50	63	$47\frac{2}{3}$	39
$58\frac{1}{3}$	$49\frac{2}{3}$	$50\frac{1}{3}$	$16\frac{1}{3}$	$7\frac{2}{3}$

242. Oral Problems.

1. A boy has 5 packs of fire-crackers. After shooting off a pack and a half, how many will he have?

2. A farmer cut $2\frac{1}{2}$ tons of hay on one piece of land and 9 tons on another. How many tons of hay did he cut?

3. If it takes $2\frac{1}{2}$ yards for a jacket, and $3\frac{1}{2}$ yards for a coat, how many yards will be needed for both?

4. $2\frac{1}{3}$ yards of ribbon are cut from a 10-yard roll. How many yards remain?

5. From a tub containing $25\frac{3}{4}$ pounds of butter there are sold $5\frac{1}{2}$ pounds. How many pounds are left?

6. A quarter of a pound of tea is taken from a 2-pound package. How much tea remains in the package?

7. A real estate agent sold $2\frac{3}{4}$ acres from a 10-acre plot. How much land remains unsold?

8. Mr. Jones took to market $12\frac{3}{4}$ bushels of potatoes. He sold $10\frac{1}{4}$ bushels. How many bushels did he bring home?

9. A storekeeper sold 2 pieces of silk, $2\frac{2}{3}$ yards in each piece. How many yards did he sell?

10. How many pounds of coffee are there in 2 packages weighing $1\frac{3}{4}$ pounds each?

243. Written Problems.

1. Find the weight of 4 tubs of lard containing $24\frac{1}{2}$, 26, $25\frac{1}{2}$, and $27\frac{1}{2}$ pounds, respectively.

2. A barrel of sugar weighs, including the barrel, 310 pounds. The barrel weighs $20\frac{1}{2}$ pounds. How much does the sugar weigh?

3. A merchant sold $2\frac{3}{4}$ yards of cloth to one customer, $3\frac{1}{4}$ yards to another, $4\frac{1}{4}$ yards to a third, and $5\frac{3}{4}$ yards to a fourth. How many yards did he sell in all?

4. A grocer bought $13\frac{1}{3}$ dozen eggs from one dealer, and $47\frac{2}{3}$ from another. How many dozen did he buy?

5. If $16\frac{2}{3}$ yards of silk are cut from a piece containing 30 yards, how many yards are left?

6. I own 20 acres of land. I keep $18\frac{1}{4}$ acres, and sell the rest at 40 dollars per acre. How much do I receive for it?

7. There are 10 dozen oranges in a box. $3\frac{1}{3}$ dozen are spoiled. How many good oranges are there?

8. If 2 gallons and 1 quart of milk are sold from a 10-gallon can, how much milk remains?

9. School is in session 5 hours a day. How much time is a boy in school on Monday, if he comes $1\frac{1}{4}$ hours late in the morning, and $\frac{1}{2}$ hour late in the afternoon?

10. A girl spends $\frac{1}{3}$ of the day in school, preparing her lessons and doing other work; she spends $\frac{1}{3}$ of the day at her meals and play; she sleeps the remainder of the time. How many hours does she sleep?

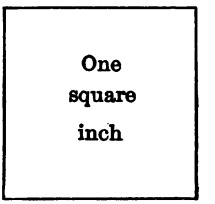
SQUARES AND RECTANGLES.

244. A **rectangle** is a plane figure having four sides and four square corners.

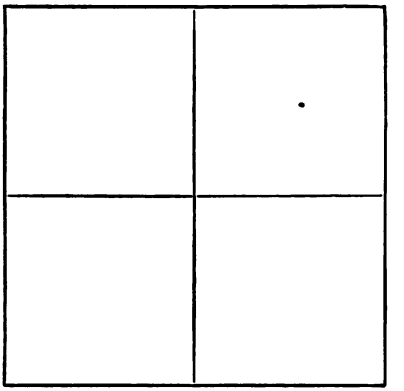
A **square** is a rectangle having four *equal* sides.

245. Preliminary Exercises.

1. Cut out several paper squares having one-inch sides. Each contains one square inch.



2. Arrange four one-inch squares so as to form a square. What is the length of the new square? What is its breadth? How many inches around it?



3. Make a square with nine one-inch squares. What is the length of this square? What is its breadth? How many inches around it?

The distance around a rectangle is called the **perimeter.**

4. Make a rectangle containing six one-inch squares. What is its length? What is its breadth? What is its perimeter?

246. Oral Exercises.

1. A rectangle contains six square inches. Its length is three inches. What is its breadth?

2. A rectangle contains six square inches. Its length is six inches. What is its breadth?

3. What is the perimeter of a rectangle six inches long, one inch broad?

4. A square contains 16 square inches. What is its length?

5. How many square inches in a sheet of paper six inches long, five inches wide?

6. Divide a one-inch square into two equal rectangles. What part of a square inch does each rectangle contain?

7. Place the two rectangles so as to form a rectangle two inches long, one-half inch broad. What is the area of the new rectangle?

> The number of square units in a rectangle is called its **area**.

8. Find the area of a rectangle three inches long, six inches broad.

9. The perimeter of a square is 8 inches. What is its area?

10. The area of a square is 25 square inches. What is the perimeter?

247. Written Exercises.

1. Find the area of a rectangle 10 inches long, $8\frac{1}{2}$ inches wide. What is the perimeter?

2. The perimeter of a rectangle is 43 inches. Its length is $11\frac{1}{2}$ inches. What is its width? Find the area.

3. The perimeter of a square is 52 inches. What is the area?

4. How many square inches in a pane of glass measuring $12\frac{3}{4}$ inches by 8 inches?

5. How many square inches in a sheet of paper 18 inches long, $11\frac{1}{2}$ inches wide?

CHAPTER IV.

MULTIPLIERS AND DIVISORS OF TWO OR MORE FIGURES. — MULTIPLIERS CONTAINING FRACTIONS. — ADDITION AND SUBTRACTION OF EASY MIXED NUMBERS. — INCH, FOOT, AND YARD. — AREAS OF RECTANGLES.

HALVES AND FOURTHS.

248. Preliminary Exercises.

Draw a circle to represent a pie. Divide it into two equal parts. What is each part called? Divide it into four equal parts. What is each part called?

How many fourths in 1?

How many fourths in half a pie? How many fourths in $\frac{1}{2}$?

How many fourths in 2? Eight fourths are how many whole ones?

249. Oral Problems.

1. A boy spends $\$\frac{1}{2}$ for a knife and $\$\frac{1}{4}$ for a ball. How many quarter dollars does he pay for both?

2. A girl buys $\frac{3}{4}$ pound of candy at one store and $\frac{1}{4}$ pound at another. How much candy does she buy at both stores?

3. If it takes $3\frac{1}{4}$ yards of cloth for a coat and $1\frac{1}{4}$ yards for a vest, how many yards will it take for both?

4. If a geography costs $\$\frac{3}{4}$, a reader $\$\frac{1}{4}$, and a grammar $\$\frac{1}{2}$, what will be paid for the three books?

5. The school is $\frac{3}{4}$ of a mile from Henry's house. How far does he walk going and coming?

250. Written Exercises.

Add:

1.	2.	3.	4.	5.
$36\frac{1}{4}$	$56\frac{1}{4}$	$83\frac{1}{4}$	$63\frac{1}{2}$	$27\frac{3}{4}$
8	$3\frac{1}{4}$	$6\frac{1}{4}$	$6\frac{1}{4}$	$63\frac{1}{4}$
$5\frac{3}{4}$	$9\frac{1}{4}$	$7\frac{1}{4}$	$2\frac{1}{4}$	9

6. $3\frac{1}{4} + 6 + 87\frac{1}{2}$

7. $75\frac{1}{2} + 6\frac{1}{4} + 3\frac{1}{2}$

8. $36\frac{3}{4} + 27 + 6\frac{1}{2}$

9. $62\frac{1}{2} + 7\frac{1}{2} + 16\frac{1}{4}$

10. $3\frac{1}{4} + 32\frac{3}{4} + 7\frac{1}{4}$

11. $14\frac{1}{2} + 3\frac{1}{4} + 60\frac{1}{4}$

251. Oral Problems.

1. A boy has $\$2\frac{1}{4}$. How much will he have after he spends $\$\frac{1}{4}$?

2. A woman has 15 yards of muslin. How much will she have after she uses $14\frac{3}{4}$ yards?

3. A milk can holds 5 gallons when full. If there are $4\frac{1}{2}$ gallons in it, how much more milk will it hold?

4. To 3 gallons 3 quarts add 1 gallon 1 quart.

5. A girl wishes to buy a doll that costs $\$1\frac{1}{4}$. If she has $\$\frac{3}{4}$, how much more does she need?

252. Written Exercises.

Find missing numbers:

1.	2.	3.	4.	5.
$65\frac{1}{4}$	$\$10\frac{1}{4}$	$63\frac{3}{4}$ gal.	$35\frac{1}{4}$ lb.	$30\frac{3}{4}$
$+$ ___	$+$ ___	$+$ ___	$+$ ___	$+$ ___
$70\frac{1}{2}$	$\$12\frac{3}{4}$	$72\frac{3}{4}$ gal.	36 lb.	35

253. Subtract:

1.	2.	3.	4.	5.
$\$65\frac{1}{2}$	$63\frac{3}{4}$ yd.	$792\frac{1}{4}$ lb.	40 ft.	50 pt.
$\$5\frac{1}{4}$	$19\frac{1}{2}$ yd.	$26\frac{1}{4}$ lb.	$\frac{1}{2}$ ft.	$\frac{1}{4}$ pt.

6.	7.	8.	9.	10.
40	$40\frac{3}{4}$	$40\frac{3}{4}$	$275\frac{1}{4}$	$275\frac{3}{4}$
$\frac{3}{4}$	$31\frac{1}{2}$	$29\frac{3}{4}$	$68\frac{1}{4}$	$68\frac{1}{4}$

254. Written Problems.

1. A sailor has 10 yards of cloth. He uses $3\frac{1}{2}$ yards for a coat and $1\frac{1}{2}$ yards for a vest. How many yards has he left?

2. I buy $1\frac{1}{4}$ pounds of tea at 60 cents per pound. How much change from a dollar should I receive?

3. John buys 9 pounds of starch and has it put up into four packages. If the starch costs 8 cents per pound, what is each package worth?

4. A box of eggs contains 30 dozen. How many eggs will be left after $3\frac{1}{2}$ dozen are sold?

5. A woman has 15 yards 2 feet of ribbon. How much ribbon has she after using 6 yards 1 foot?

6. A grocer has 55 pounds of tea. How many pounds has he after selling $25\frac{1}{2}$ pounds and buying $10\frac{1}{2}$ pounds?

7. What will $1\frac{3}{4}$ pounds of allspice cost at 4 cents per ounce?

8. Sold $3\frac{3}{4}$ pounds of butter to one customer, and $2\frac{1}{2}$ pounds to another. How much was received at 28 cents per pound?

9. A man works 300 days in a year, receiving $\$3\frac{1}{2}$ per day. How much does he earn in a year?

10. I have $14\frac{1}{2}$ pounds of candy. How many pounds shall I have after selling nine $\frac{1}{4}$-pound boxes of candy?

11. A grocer sells $47\frac{1}{2}$ pounds of flour from a barrel containing 196 pounds. How many pounds are left?

12. How many yards of ribbon are there in three rolls containing $24\frac{1}{2}$ yards each?

13. There are $49\frac{1}{2}$ pounds of butter in a tub. The tub itself weighs $10\frac{1}{2}$ pounds. How many pounds do both weigh together?

14. How many inches of cord are there in a piece $1\frac{3}{4}$ yards long? (There are 36 inches in one yard.)

15. A boy is 12 years 7 months old; his sister is 9 years 3 months old. How many months older is the boy?

MULTIPLICATION BY 11 AND 12.

255. Make tables of 11's and 12's. Learn them.

256. Oral Exercises.

Give products:

10 × 8	11 × 6	3 × 12	11 × 11	9 × 9
9 × 10	12 × 12	10 × 11	11 × 7	9 × 11
4 × 11	12 × 9	11 × 12	12 × 10	12 × 11
11 × 9	8 × 11	12 × 8	7 × 7	10 × 9
11 × 6	11 × 4	11 × 3	11 × 3	9 × 6

257. Written Exercises.

Multiply by 11: By 12:

1.	13	6.	31	11.	61	16.	615	21.	7,908
2.	15	7.	33	12.	73	17.	816	22.	8,085
3.	17	8.	41	13.	93	18.	1,062	23.	7,467
4.	22	9	43	14.	213	19.	3,124	24.	5,908
5.	24	10.	51	15.	456	20.	5,729	25.	3,095

DIVISION BY 11 AND 12.

258. Written Exercises.

Divide by 11: By 12:

1.	264	7.	3,960	13.	9,431	19.	16,700
2.	528	8.	7,392	14.	12,220	20.	21,012
3.	792	9.	1,876	15.	17,160	21.	27,627
4.	1,056	10.	3,670	16.	46,992	22.	36,318
5.	1,320	11.	5,302	17.	93,324	23.	53,827
6.	1,848	12.	7,835	18.	12,209	24.	70,304

REVIEW.

259. Written Exercises.

1. $35\frac{1}{2}+18\frac{1}{2}$
2. $17\frac{1}{4}+23\frac{3}{4}$
3. $27\frac{1}{2}+39\frac{1}{2}$
4. $64\frac{2}{3}+16\frac{1}{3}$
5. $49\frac{1}{2}+25\frac{1}{2}$
6. $45\frac{3}{4}+26\frac{1}{4}$
7. $1\frac{1}{2}+1\frac{1}{2}+1\frac{1}{4}$
8. $2\frac{2}{3}+2\frac{2}{3}+2\frac{2}{3}$
9. $1\frac{1}{3}+2\frac{1}{3}+3\frac{1}{3}$
10. $1\frac{1}{4}+2\frac{1}{4}+3\frac{1}{4}+4\frac{1}{4}$
11. $186\times\frac{2}{3}$
12. $248\times\frac{1}{2}$
13. $324\times\frac{3}{4}$
14. $645\times\frac{1}{5}$
15. $488\times\frac{3}{8}$
16. $420\times\frac{4}{5}$
17. $408\times\frac{5}{8}$
18. $20\times2\frac{1}{2}$
19. $20\times3\frac{1}{2}$
20. $20\times4\frac{1}{2}$
21. $30\times2\frac{2}{3}$
22. $20\times2\frac{3}{4}$
23. $20\times2\frac{3}{5}$
24. $30\times3\frac{5}{6}$

260. Find missing numbers:

1. $54\frac{1}{2}-29\frac{1}{4}=\ ?$
2. $?\ +49\frac{1}{3}=50$
3. $40\frac{1}{4}+\ ?\ =42$
4. $?\ +38\frac{1}{4}=70\frac{1}{2}$
5. $79\frac{3}{4}-30\frac{1}{2}=\ ?$
6. $37\frac{2}{3}-18\frac{1}{3}=\ ?$
7. $?\ +\ \frac{1}{2}=59$
8. $60\frac{1}{2}+\ ?=80$
9. $75\frac{1}{3}+\ ?=100$
10. $?\ +\ 6\frac{3}{4}=59$

261. Oral Problems.

1. If 8 ounces of tea cost 40 cents, what will be the price of 5 ounces?

2. How much will be paid for three quarts and a pint of milk at 3 cents per pint?

3. What will 3 pounds of sugar cost if 5 pounds cost 30 cents?

4. If ice-cream is worth 40 cents per quart, how much will $\frac{1}{2}$ pint be worth?

5. If oil costs 8 cents per gallon, how much can be bought for 1 cent?

6. What will 8 yards of muslin cost at 12 cents per yard?

7. At \$11 each, how many calves can be bought for \$132?

8. How much does a man earn in a week if he earns \$6 Monday, \$7 Tuesday, \$8 Wednesday, \$9 Thursday, \$7 Friday, and \$6 Saturday?

9. Mr. Arch moves into a house Jan. 15. How many days will he have been in the house on Jan. 23?

10. How many 9-cent books can be bought for 75 cents, and how much money will be left?

262. Written Problems.

1. A man spends \$90. He pays \$18 for a coat and the remainder for 12 barrels of flour. How much does each barrel of flour cost?

2. At 3 cents an ounce, find the cost of 2 pounds of pepper.

3. A yard of cloth is worth 96 cents. What is the value of three-fourths of a yard?

4. How many ounces in 12 pounds?

5. How many gallons in 96 pints?

6. What will be the cost of 2 dozen oranges at 4 cents for each orange?

7. There are 95 men in a company and 10 companies in a regiment. How many men are there in a regiment?

8. A grocer had on hand Monday morning 99 eggs. During the day he sold 57 and bought 32. How many had he on hand Monday night?

9. A merchant had 90 barrels of flour. He sold 28 barrels to one man and 34 to another. How many barrels had he left?

10. A farmer has 42 pigs. He keeps 29 of them and sells the others at $5 each. How much does he receive for the pigs he sells?

11. What are 12 horses worth at $120 each?

12. Eight overcoats cost $240. What is the price of one overcoat?

13. If there are 12 inches in a foot, how many feet are there in 600 inches?

14. There are 3 feet in a yard. How many inches are there in 10 yards?

15. What will be the cost of 1 gallon, 1 quart, 1 pint of milk, at 3 cents a pint?

263. Oral Exercises.

Give answers:

1. $30+60-40$
2. $(20+10)\times 3$
3. $\frac{1}{4}$ of $(30+50)$
4. $90-30-40$
5. $\frac{1}{3}$ of $(90-30)$
6. $(2\times 20)+50$
7. $(4\times 20)-50$
8. $\frac{1}{8}$ of (20×4)
9. $(90\div 10)\div 3$
10. $\frac{1}{4}$ of $(80\div 10)$
11. $(\frac{1}{3}$ of $90)+60$
12. $(80\div 4)\times 3$

264. Give missing numbers:

1. $30+40-\ ?\ =20$
2. $20+\ ?\ +40=70$
3. $(80\div 40)+\ ?\ =\ 5$
4. $(3\times\ ?\ )+10=70$
5. $(80\div\ ?\ )\div\ 2=\ 2$
6. $(\frac{1}{2}$ of $80)\div\ ?\ =\ 2$

MULTIPLIERS ENDING IN 0.

265. Oral Exercises.

$6\times 4=?$ $4\times 6=?$ $20\times 4=?$ $4\times 20=?$ $12\times 20=?$

Multiplying by 20 is the same as multiplying by 2 and affixing a cipher to the product.

$4\times 30=?$ $9\times 30=?$ $12\times 30=?$ $13\times 20=?$ $14\times 20=?$ $13\times 30=?$ $14\times 30=?$

Find products:

1. 6×50
2. 7×40
3. 8×30
4. 9×20
5. 14×20
6. 13×30
7. 12×40
8. 11×60
9. 25×10
10. 24×20
11. 23×30
12. 22×40

266. Written Exercises.

Multiply 27 by 70.

Multiply by 7 tens, placing the first figure of the product under the 7. Write a cipher in the units' place.

$$\begin{array}{r} 27 \\ 70 \\ \hline 1890 \end{array}$$ *Ans.*

EXPLANATION. — 27 multiplied by 7 tens gives 189 tens, which is equal to 1890 units.

Find products:

1. 15×30	4. 21×90	7. 345×40	10. 987×100
2. 17×50	5. 23×110	8. 567×60	11. 765×120
3. 19×70	6. 123×20	9. 789×80	12. $1{,}983 \times 50$

DIVISORS ENDING IN 0.

267. Written Exercises.

Divide 980 by 70.

Cancel a cipher in the divisor and one in the dividend. Divide the remaining figures of the dividend by the remaining figures of the divisor.

$7\cancel{0})98\cancel{0}$

14 *Ans.*

Find quotients:

1. $80 \div 20$	5. $600 \div 60$	9. $10{,}010 \div 70$
2. $240 \div 20$	6. $1{,}200 \div 80$	10. $23{,}450 \div 50$
3. $360 \div 30$	7. $1{,}680 \div 120$	11. $40{,}040 \div 70$
4. $480 \div 40$	8. $2{,}340 \div 90$	12. $65{,}350 \div 50$

268. Divide 189 by 30.

Cancel the cipher in the divisor, and cut off the units' figure of the dividend by a vertical line, writing the latter in the quotient as a fraction with 30 underneath. Divide the remaining figures of the dividend by the remaining figure of the divisor, writing the quotient before the fraction.

$3\emptyset)\overline{18|9}$

$6\frac{9}{30}$ *Ans.*

Divide:

1. $81 \div 10$	5. $565 \div 80$	9. $13{,}415 \div 90$
2. $81 \div 40$	6. $843 \div 30$	10. $20{,}241 \div 110$
3. $203 \div 50$	7. $6{,}352 \div 50$	11. $39{,}169 \div 110$
4. $286 \div 70$	8. $9{,}034 \div 70$	12. $62{,}883 \div 80$

269. Divide 4341 by 80.

Cancel the cipher in the divisor and cut off the units' figure in the dividend, writing the latter as a fraction, etc. Dividing 434 by 8 gives 54 as the quotient with a remainder of 2 tens. Place the 2 tens before the 1 unit in the fraction.

$8\emptyset)\overline{434|1}$

$54\frac{21}{80}$

Divide:

1.	$91 \div 20$	6.	$567 \div 90$	11.	$69{,}365 \div 90$
2.	$91 \div 40$	7.	$8{,}764 \div 70$	12.	$43{,}210 \div 70$
3.	$53 \div 20$	8.	$23{,}478 \div 50$	13.	$54{,}210 \div 50$
4.	$92 \div 40$	9.	$46{,}258 \div 30$	14.	$4{,}320 \div 30$
5.	$133 \div 30$	10.	$72{,}681 \div 30$	15.	$6{,}584 \div 110$

REVIEW.

270. Mixed Numbers.

Find the sum of $3\frac{1}{4}$, $62\frac{1}{2}$, and $18\frac{3}{4}$.

First find the sum of the fractions, changing $\frac{1}{2}$ to $\frac{2}{4}$.

$\frac{1}{4} + \frac{2}{4} + \frac{3}{4} = \frac{6}{4} = 1\frac{2}{4} = 1\frac{1}{2}$.

1 fourth + 2 fourths + 3 fourths are 6 fourths, or $1\frac{2}{4} = 1\frac{1}{2}$. Write $\frac{1}{2}$ in the fraction column and carry 1 to the column of units.

$$\begin{array}{r} 3\frac{1}{4} \\ 62\frac{1}{2} \\ 18\frac{3}{4} \\ \hline 84\frac{1}{2} \end{array}$$ *Ans.*

Add:

1.	$18\frac{3}{4}$	2.	$24\frac{3}{4}$	3.	$68\frac{3}{4}$	4.	$15\frac{1}{2}$	5.	$65\frac{1}{2}$
	$9\frac{1}{4}$		19		$5\frac{3}{4}$		$9\frac{1}{4}$		$9\frac{1}{2}$
	$6\frac{1}{2}$		$4\frac{1}{2}$		$\frac{3}{4}$		$63\frac{1}{2}$		8
6.	$35\frac{1}{4}$	7.	$39\frac{1}{2}$	8.	$10\frac{1}{2}$	9.	$47\frac{3}{4}$	10.	$46\frac{1}{2}$
	$3\frac{1}{2}$		$5\frac{3}{4}$		$6\frac{3}{4}$		$9\frac{3}{4}$		$8\frac{1}{4}$
	$3\frac{3}{4}$		$17\frac{1}{2}$		$9\frac{1}{4}$		$25\frac{3}{4}$		$23\frac{1}{4}$

271. Subtract:

1. $30\frac{3}{4}$	2. $43\frac{3}{4}$	3. $90\frac{3}{4}$	4. $86\frac{1}{4}$	5. 80
$27\frac{1}{2}$	$26\frac{1}{4}$	$85\frac{3}{4}$	49	$37\frac{1}{2}$
6. $85\frac{1}{2}$	7. $32\frac{2}{3}$	8. 78	9. 25	10. 63
$33\frac{1}{4}$	$25\frac{1}{3}$	$19\frac{1}{3}$	$17\frac{2}{3}$	$19\frac{1}{4}$

272. Long Measure.

12 inches (*in.*) = 1 foot (*ft.*).
3 feet = 1 yard (*yd.*).

273. Oral Problems.

1. How many feet are there in 20 yards?

2. At the rate of 30 cents per yard, what will be the cost of 2 feet of ribbon?

3. How many inches are there in $1\frac{3}{4}$ ft.?

4. Change 120 inches to feet.

5. How many feet in 3 yards? How many inches?

6. What part of a foot is 9 inches?

7. Add 1 foot 6 inches to 1 foot 6 inches.

8. 10 yd. 2 ft. are equal to how many feet?

MULTIPLIERS OF TWO DIGITS.

274. Multiply 13 by 13:

Multiply first by the units' figure, placing the right-hand figure of the product in the units' place. Then multiply by the tens' figure, placing the right-hand figure of this product under the tens' figure of the multiplier. Then draw a line and add the products.	13 13 39 13 169

234	406	1234	1456
14	21	31	45
936	406	1234	7280
234	812	3702	5824
3,276	8,526	38,254	65,520

275. Written Exercises.

Multiply:

1. 23×13	11. 24×24	21. 132×85	31. 416×66
2. 55×13	12. 32×32	22. 104×94	32. 808×69
3. 61×14	13. 45×35	23. 215×18	33. $1{,}204 \times 78$
4. 15×21	14. 65×44	24. 306×27	34. $1{,}050 \times 86$
5. 27×32	15. 81×52	25. 523×29	35. $1{,}042 \times 88$
6. 43×51	16. 66×55	26. 309×37	36. $1{,}025 \times 97$
7. 72×17	17. 104×64	27. 531×39	37. $1{,}011 \times 98$
8. 81×71	18. 115×72	28. 234×47	38. $4{,}567 \times 19$
9. 57×16	19. 130×74	29. 560×56	39. $3{,}673 \times 27$
10. 44×22	20. 116×82	30. 206×58	40. $2{,}974 \times 32$

LONG DIVISION.

276. Divide 156 by 13:

In long division, the quotient is placed *over* the dividend. The divisor, 13, is contained in the first two figures of the dividend 1 time. We write 1 in the quotient, and multiply the divisor by it. The product, 13, is placed under the first two figures of the dividend. A line is drawn, 13 is subtracted from 15, and the remainder is written. The next figure, 6, of the dividend is brought down. 13 is contained in 26 two times. The 2 is written in the quotient. Multiplying, we place the product, 26, under the partial dividend, 26. There being no remainder, the answer is 12.

```
  12 quotient.
13)156
   13
   26
   26
```

21 *Ans.*	11 *Ans.*	22 *Ans.*	203 *Ans.*
14)294	15)165	22)484	35)7105
28	15	44	70
14	15	44	105
14	15	44	105

Be careful to place each quotient figure over the proper figure of the dividend.

277. Written Exercises.

Divide:

1. $231 \div 21$
2. $252 \div 21$
3. $273 \div 21$
4. $483 \div 21$
5. $651 \div 21$
6. $2{,}352 \div 21$

7. 4,473 ÷ 21	15. 9,952 ÷ 32
8. 6,573 ÷ 21	16. 7,392 ÷ 32
9. 9,641 ÷ 31	17. 1,302 ÷ 42
10. 6,603 ÷ 31	18. 1,428 ÷ 42
11. 943 ÷ 41	19. 1,333 ÷ 43
12. 1,394 ÷ 41	20. 1,376 ÷ 43
13. 4,642 ÷ 22	21. 1,089 ÷ 33
14. 2,684 ÷ 22	22. 3,729 ÷ 33

278. Oral Problems.

1. If three dolls cost 90 cents, what will two dolls cost?

2. Find the cost of $2\frac{1}{4}$ lb. tea at 40 cents per pound.

3. A grocer sold $3\frac{1}{2}$ lb. 6-cent sugar and spent the money for 7 oranges. What did the oranges cost apiece?

4. A storekeeper sold $\frac{1}{2}$ of a pound of candy to one customer, and a quarter of a pound to another. How much did he receive from both if the candy was worth 40 cents per pound?

5. A man has 3 piles of bricks, each containing 300. How many bricks has he?

6. How many feet have 22 cows?

7. If 20 pounds of meal cost 60 cents, how many pounds can be bought for 36 cents?

8. A farmer sells 43 cows, which are one-half his herd. How many did he have at first?

9. When maple syrup costs 10 cents a half-pint, how much can be bought for 80 cents?

10. At $2 per day, how much will a man earn in 7 weeks of 6 days each?

11. Find the cost of $12\frac{1}{2}$ tons of coal at $4 per ton.

12. A man owned $\frac{1}{2}$ of a canal-boat. What part did he own after selling $\frac{1}{2}$ of his share?

13. I bought 12 pounds of sugar. How many pounds shall I have after using $2\frac{1}{2}$ pounds?

14. Philadelphia is 90 miles from New York. After travelling from New York $\frac{2}{3}$ of the distance, how many more miles has a boy to travel to reach Philadelphia?

15. A lot is 100 feet square. How many feet of fence will be needed to enclose it?

279. Written Problems.

1. Draw a rectangle to represent a piece of ground 65 feet long, 35 feet wide. How many feet of fence will be required to enclose it?

2. What will be the cost of $11\frac{1}{2}$ yards of cloth at $1.80 per yard?

3. When sheep cost $5 each, how many can be bought for $165?

4. How many inches are there in 5 yards?

NOTE. — In 1 yard there are 3 feet; in 5 yards, therefore, there will be 5 times 3 feet. Change the feet to inches.

5. How many ounces in 30 pounds?

6. Find the total cost of $2\frac{1}{2}$ yards of lace at 16 cents a yard, and 7 yards of ribbon at 8 cents a yard.

7. There are 100 pages in a book. If Lucy reads 14 pages a day, how many pages will there be left for her to read after 6 days?

8. A grocer puts up 48 pounds of tea in $\frac{1}{2}$-pound packages. How many packages are there?

9. How many gallons of oil are there in two cans, each containing 12 gallons 2 quarts?

10. Three and one-half pounds of candy are divided equally among 8 boys. How many ounces does each boy receive?

11. A woman spends $\$18\frac{3}{4}$ Monday, $\$12\frac{1}{2}$ Tuesday, and $\$18\frac{3}{4}$ Wednesday. How much money does she spend in the three days?

12. A farmer had 12 pigs. He sold $\frac{1}{2}$ of them at $\$9$ each, $\frac{1}{3}$ of them at $\$8$ each, and $\frac{1}{6}$ of them at $\$7$ each. How much did he receive?

13. Mr. Jones spent $\frac{1}{2}$ of his money for a horse which cost him $\$175$. How much money did he have left?

14. New York is 90 miles from Philadelphia. After travelling $\frac{5}{6}$ of the distance, how many miles has a girl yet to go?

SPECIAL DRILLS.

280. Give sums:

13 + 13	14 + 15	16 + 12	20 + 15	22 + 23
18 + 11	19 + 30	65 + 14	17 + 50	28 + 21
33 + 16	27 + 32	43 + 46	51 + 37	44 + 45
29 + 60	67 + 22	63 + 36	26 + 72	73 + 25

281. Give differences:

25 − 13	31 − 20	65 − 11	87 − 75	46 − 26
29 − 11	49 − 30	79 − 14	59 − 27	99 − 63
49 − 33	98 − 73	78 − 31	67 − 50	35 − 15
89 − 60	89 − 46	88 − 51	89 − 44	99 − 62

282. Give products:

13 × 2	14 × 2	21 × 2	22 × 2	23 × 2
31 × 2	32 × 2	33 × 2	34 × 2	41 × 2
44 × 2	13 × 3	23 × 3	21 × 3	22 × 3
33 × 3	31 × 3	32 × 3	42 × 2	21 × 4

283. Give quotients:

88 ÷ 4	39 ÷ 13	26 ÷ 2	63 ÷ 21	86 ÷ 2
64 ÷ 32	62 ÷ 2	96 ÷ 32	42 ÷ 2	68 ÷ 34
28 ÷ 2	66 ÷ 33	48 ÷ 2	46 ÷ 23	66 ÷ 2
44 ÷ 22	82 ÷ 2	90 ÷ 30	84 ÷ 2	93 ÷ 31

284. Give results:

$1\frac{1}{2}+\frac{1}{2}$	$1\frac{3}{4}+\frac{1}{4}$	$3\frac{1}{3}+\frac{1}{3}$	$7\frac{1}{2}+\frac{1}{2}$	$2\frac{1}{4}+\frac{1}{4}$
$1\frac{1}{2}+1\frac{1}{2}$	$3\frac{1}{2}+1\frac{1}{4}$	$7\frac{1}{3}+1\frac{2}{3}$	$9\frac{1}{2}+1\frac{1}{2}$	$8\frac{1}{4}+1\frac{3}{4}$
$1\frac{1}{2}+2\frac{1}{2}$	$2\frac{1}{4}+3\frac{1}{2}$	$3\frac{2}{3}+5\frac{1}{3}$	$4\frac{1}{2}+6\frac{1}{2}$	$7\frac{3}{4}+9\frac{1}{4}$
$2\frac{1}{2}+2\frac{1}{2}$	$3\frac{1}{4}+3\frac{1}{2}$	$5\frac{1}{3}+5\frac{2}{3}$	$7\frac{1}{2}+9\frac{1}{2}$	$9\frac{3}{4}+9\frac{1}{4}$

285. Oral Problems.

1. A boy paid $\$1\frac{1}{2}$ for a hat and $\$\frac{1}{2}$ for collars. How much did he spend?

2. Mrs. Smith is 37 years old; her brother is 22 years older. What is his age?

3. If it takes $10\frac{1}{2}$ yards for the skirt of a dress and $3\frac{1}{2}$ yards for the waist, how many yards are needed for the whole dress?

4. There are 300 pounds of sugar in a barrel. After $\frac{1}{2}$ pound is taken out, how many pounds will be left in the barrel?

5. A boy has 65 marbles; he loses 21. How many has he remaining?

6. What will be the total cost of 10 pounds of 6-cent sugar and a pound of 22-cent butter?

7. A woman buys 5 yards of 12-cent muslin and receives 40 cents change. How much did she give the clerk?

8. A man sells a pound of tea for 60 cents and loses 15 cents on it. How much did it cost him?

9. Bought two bars of 20-cent soap and 25 cents' worth of eggs. How much was the bill?

10. If tea costs 80 cents a pound, how much will a pound and three-quarters cost?

11. Paid 10 cents for $\frac{1}{2}$ pound of candy. What would be the cost of 2 lb.?

12. How much should Jane pay for 2 dozen oranges at $1\frac{1}{2}$ cents for each orange?

13. A grocer mixed 3 pounds of coffee at 20 cents a pound and 1 pound of coffee at 28 cents. How much were the 4 pounds worth?

14. A girl worked out 93 problems in 3 weeks. How many did she work in one week?

15. A farmer bought 2 cows at $40 each, and paid for them with $20 bills. How many bills did he give?

16. A family uses a quart and a pint of milk a day. How many quarts are used in 6 days?

17. A tea-dealer sold $2\frac{1}{2}$ pounds of tea to one customer and $4\frac{1}{2}$ to another. How much did he sell to both?

18. Paid 66 cents for 3 pounds of candy. What was the price per pound?

19. Bought $4\frac{1}{2}$ yards of linen one day and $\frac{1}{2}$ of a yard the next day. What was the cost of all at 20 cents per yard?

20. What will be the total cost of 12 oranges at 2 cents each, and 20 pears at 3 cents each?

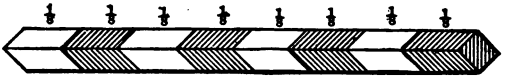
HALVES, FOURTHS, AND EIGHTHS.

286. Oral Exercises.

When a thing is divided into *two* equal parts, each part is called a *half*, $\frac{1}{2}$.

When a thing is divided into *four* equal parts, each part is called a *fourth*, $\frac{1}{4}$.

When a thing is divided into *eight* equal parts, each part is called an *eighth*, $\frac{1}{8}$.



How many halves in a pie? How many fourths in a pie? How many eighths in a pie?

$1 = \frac{?}{2}$ $\quad$ $1 = \frac{?}{4}$ $\quad$ $1 = \frac{?}{8}$

How many fourths in half a pie? How many eighths in half a pie? How many eighths in one-fourth of a pie?

$\frac{1}{2} = \frac{?}{4}$ $\quad$ $\frac{1}{2} = \frac{?}{8}$ $\quad$ $\frac{1}{4} = \frac{?}{8}$

One-half + one-fourth = how many fourths?
One-half + one-eighth = how many eighths?
One-fourth + one-eighth = how many eighths?
One-fourth + three-eighths = how many eighths?
One-half + three-eighths = how many eighths?
One-fourth + five-eighths = how many eighths?

287. Oral Exercises.

$\frac{1}{2}+\frac{1}{4}$	$\frac{1}{2}+\frac{1}{8}$	$\frac{1}{4}+\frac{1}{8}$
$2\frac{1}{2}+1\frac{1}{4}$	$3\frac{1}{2}+1\frac{1}{8}$	$4\frac{1}{4}+1\frac{1}{8}$
$4\frac{1}{4}+\frac{3}{8}$	$5\frac{1}{2}+\frac{3}{8}$	$6\frac{1}{4}+\frac{5}{8}$

288. Written Exercises.

Add:

1. $16\frac{1}{2}$	2. $19\frac{1}{2}$	3. $27\frac{1}{4}$	4. $50\frac{1}{4}$	5. $19\frac{1}{2}$
$25\frac{1}{4}$	$43\frac{1}{8}$	$30\frac{1}{8}$	$16\frac{3}{8}$	$62\frac{3}{8}$
6. $8\frac{1}{4}$	7. $73\frac{1}{4}$	8. $14\frac{1}{8}$	9. $56\frac{1}{8}$	10. $26\frac{3}{8}$
$90\frac{5}{8}$	$18\frac{1}{2}$	$85\frac{1}{2}$	$43\frac{1}{4}$	$26\frac{1}{4}$

289. Find missing numbers:

1. $36\frac{1}{2}$	2. $27\frac{1}{4}$	3. $55\frac{1}{8}$	4. $48\frac{3}{8}$	5. $73\frac{5}{8}$
$+?$	$+?$	$+?$	$+?$	$+?$
40	30	56	49	74
6. ?	7. ?	8. ?	9. ?	10. ?
$+15\frac{7}{8}$	$+27\frac{1}{2}$	$+50\frac{1}{2}$	$+10\frac{1}{2}$	$+19\frac{1}{8}$
16	$30\frac{3}{4}$	$68\frac{3}{4}$	$45\frac{5}{8}$	$72\frac{5}{8}$

290. Subtract:

1.	2.	3.	4.	5.
$33\frac{7}{8}$	$40\frac{7}{8}$	$65\frac{7}{8}$	$16\frac{7}{8}$	$59\frac{7}{8}$
$6\frac{3}{8}$	$15\frac{1}{4}$	$29\frac{5}{8}$	$8\frac{3}{4}$	$20\frac{1}{8}$
6.	7.	8.	9.	10.
21	17	44	91	35
$20\frac{1}{8}$	$16\frac{3}{8}$	$43\frac{5}{8}$	$90\frac{7}{8}$	$30\frac{1}{3}$

REVIEW.

291. Add:

1.	2.	3.	4.
$143.37\frac{1}{2}$	$84.00	$386.75	$729.84
6.45	5.95	23.89	67.33
.84	$.87\frac{1}{2}$	8.86	$9.09\frac{1}{2}$
27.19	$164.12\frac{1}{2}$	.47	864.
.09	3.86	$66.18\frac{1}{2}$	$36.57\frac{1}{2}$
$707.62\frac{1}{2}$	27.95	234.93	687.19
3.11	483.20	65.00	1,000.05
25.50	.67	989.37	37.28
2.43	8.28	5.08	$.12\frac{1}{2}$

292. Subtract:

1.	3.	5.
$100.00	$684.45	$81.62\frac{1}{2}$
23.89	26.79	$5.12\frac{1}{2}$
2.	4.	6.
$1,000.00	$94.16	$1.00
.01	89.99	$.12\frac{1}{2}$

293. Multiply:

1.	\$4.85	3.	\$36.21	5.	\$20.14
	12		27		36
2.	\$57.14	4.	\$45.89	6.	\$2.50
	8		21		$12\frac{1}{2}$

294. Divide:

1. $3)\overline{\$1.86}$ 2. $8)\overline{\$864.48}$ 3. $2)\overline{\$74.25}$ 4. $13)\overline{\$4.42}$

295. Oral Problems.

1. What will be the cost of 4 pairs of shoes at \$3.50 per pair?

2. How much change will a person receive who buys 9 pounds of lard at 11 cents per pound, and gives a \$2 bill in payment?

3. A boy buys 2 collars at $12\frac{1}{2}$ cents each, a base-ball for 25 cents, and a 10-cent bat. How much money does he spend?

4. A farmer sells 48 eggs at 25 cents per dozen. How much does he get for them?

5. What is the cost of a 300-pound barrel of sugar, at 4 cents per pound?

6. How many ounces are there in 2 pounds 8 ounces?

7. A grocer sold 3 chests of tea, each weighing 60 lb., at $\$\frac{1}{2}$ per pound. How much did he receive?

8. A steak weighs 2 lb. 7 oz. What is its cost at 16¢ per pound?

9. At 2 oranges for 5 cents, what would be the cost of 2 dozen oranges?

10. How many desks are there in 4 classrooms, if there are 20 desks in each of two rooms, and 30 desks in each of the other two?

11. Add 5 feet 6 inches and 3 feet 6 inches.

12. How many yards and feet in 40 feet?

13. One-half a yard of serge costs 40 cents. How much must be paid for a yard and an eighth?

14. Find the cost of $3\frac{1}{2}$ lb. coffee, at the rate of 4 pounds for 80 cents.

15. How many ounces are there in 10 pounds?

16. How many 6-cent spools of thread can be bought for $1.80?

17. A grocer sells $3\frac{1}{2}$ pounds of sugar to one customer, 14 pounds to another, and $6\frac{1}{2}$ pounds to a third. How many pounds does he sell in all?

18. What is the cost of 6 pounds of tea, at 40 cents a pound?

19. A dealer mixes a pound of green tea, costing 50 cents a pound, with a pound of black tea, costing 30 cents a pound. How much does each pound of the mixed tea cost him?

20. A farmer receives $800 for 4 horses. For how much apiece does he sell them?

21. A man earns $150 a month. He saves $25 a month. How much does he spend in a month?

296. Written Problems.

1. I bought 18 pounds of meat at 23 cents a pound. What is the amount of my bill?

2. Find the cost of 6 chairs at $3.75 each.

3. A farmer has 14 apple trees, each yielding 2 bushels of fruit, which he sells for 50 cents a bushel. How much money does he receive for his apples?

4. What profit is made on a pound of nutmegs bought for 75 cents and sold at 6 cents an ounce?

5. A man earns $100 a month, and spends $79 a month. How much does he save in a year?

6. If 2 horses cost $300, what will be the cost of 5 horses?

7. A girl paid 50 cents for 2 yards of ribbon. How many yards could she get for $1.25?

8. How many half-pint jars can be filled from a 6-gallon tub of jelly?

9. How many gallons in 4 dozen bottles each containing a pint and a half?

10. Find the cost of 30 lemons at 30 cents a dozen.

11. What will be paid for 36 cows at $45 each?

12. A man has 13 five-dollar bills and 15 two-dollar bills. How much money has he?

13. Mr. Hart, with his wife and two children, spends four weeks in the country. He pays six dollars a week for his own board, the same for his wife's board, and $4 a week for the board of each child. How much does he pay in all?

14. If a horse eats one-fourth of a bushel of oats per day, how long will 17 bushels last?

15. When peaches are worth a half dollar per bushel, how many bushels can be bought for $18?

16. Find the cost, at 16 cents a pound, of two hams, one weighing 8 lb. 8 oz., the other weighing 7 lb. 8 oz.

17. A house is rented for $360 per year. How much rent does the owner receive in 8 months?

18. How much will it cost to shoe 20 horses, at 50 cents a shoe?

19. If a train goes $7\frac{1}{2}$ miles in a quarter of an hour, how far will it go in 2 hours?

20. If 6 men can do a piece of work in 25 days, how long will it take one man to do it?

297. Written Exercises.

Divide:

1.	861 by 21.	8.	775 by 25.	15.	630 by 15.
2.	2,331 by 21.	9.	2,775 by 25.	16.	345 by 15.
3.	451 by 41.	10.	403 by 13.	17.	4,830 by 15.
4.	861 by 41.	11.	4,173 by 13.	18.	656 by 16.
5.	352 by 32.	12.	693 by 33.	19.	396 by 36.
6.	992 by 32.	13.	434 by 14.	20.	756 by 36.
7.	575 by 25.	14.	465 by 15.		

207	$306\frac{1}{19}$	$200\frac{11}{27}$	$303\frac{24}{29}$
18)3726	19)5815	27)5411	29)8811
36	57	54	87
126	115	11	111
126	114		87
	1		24

21. $856 \div 21$	25. $4{,}560 \div 15$	29. $6{,}273 \div 51$
22. $5{,}075 \div 25$	26. $4{,}256 \div 14$	30. $7{,}393 \div 32$
23. $2{,}830 \div 14$	27. $6{,}293 \div 31$	31. $2{,}416 \div 71$
24. $1{,}520 \div 15$	28. $7{,}378 \div 61$	32. $1{,}866 \div 93$

298. Oral Problems.

1. If sugar costs 4 cents a pound, what will be the price of 21 pounds?

2. How much change do I receive if I buy 30 pounds of flour at 3¢ per pound, and give the grocer a $1 bill?

3. Paid 96 cents for 3 pounds of butter. What is the price per pound?

4. If cider is 40 cents per gallon, how many quarts can I get for 30 cents?

5. What will be the cost of 10 yards of carpet at 85 cents per yard?

6. Paid $2.40 for 20 yards of gingham. What was the price per yard?

7. How many ounces are there in ten pounds and a half?

8. If a man receives $3 per day, how much will he earn in a year, working 300 days?

9. How many lots at six hundred dollars each can be bought for thirty-six hundred dollars?

10. I sold a lot for $600 and lost on it $200. What did it cost me?

299. Written Exercises.

Pupils should be taught to find products without always placing the multiplier under the multiplicand. The following examples in multiplication and division should be worked by writing the answers on the slates directly from the blackboard or the book without writing the other numbers.

MULTIPLICATION.

300. Find the cost of:

1. 196 lb. flour at 4 cents per pound.
2. 3 gal. alcohol at $2.75 per gallon.
3. 12 sofas at $45 each.
4. 24 thousand bricks at $6 per thousand.
5. 3 houses, each costing $5,700.
6. 11 tierces lard at $6.50 per tierce.
7. 900 bushels oats at 36 cents per bushel.
8. 150 yards oilcloth at 30 cents per yard.
9. An ox, weighing 1,152 lb., at 4¢ per pound.
10. 250 acres land at $40 per acre.
11. 187 packs fire-crackers at 5¢ per pack.
12. 60 overcoats at $37 each.
13. 12 tons hay at $18.75 per ton.

DIVISION.

301. Find the cost of 1 pound, 1 gallon, 1 barrel, 1 spool, 1 thousand, etc.:

1. 96 lb. flour, $2.88.
2. 72 hats, $144.
3. 16 sofas, $800.
4. 24 thousand bricks, $120.
5. 4 houses, $26,000.
6. 40 tierces of lard, $250.
7. 90 bushels of oats, $33.30.
8. 26 yards of oilcloth, $10.40.
9. 24 horses, $4,800.
10. 72 acres of land, $2,160.
11. 36 packs of fire-crackers, $1.44.
12. 30 overcoats, $1,050.
13. 25 tons of hay, $300.

302. Oral Problems.

1. Henry had 40 cents, James had 30 cents, William had 20 cents. How much money had the three boys?

2. Mary sold some vegetables for 30 cents and some flowers for 60 cents. If she spent 40 cents for groceries, how much money had she left?

3. If a boy makes 20 cents a day selling morning papers and 10 cents a day selling evening papers, how much does he make in 3 days?

4. A man bought a pound of 50-cent tea, and 2 dozen eggs at 20 cents a dozen. How many dimes will it take to pay for them?

5. A furniture dealer sold a set of parlor furniture for $ 50 and a bedroom set for $ 30. If $\frac{1}{4}$ of the cost of both is paid in cash, how much cash does the dealer receive?

6. Francis had 80 cents. After spending 60 cents and earning 50 cents, how much had he?

7. A grocer had 90 pounds of sugar. He sold 50 pounds and used in his family 20 pounds. How much had he then?

8. A girl had 80 cents. She bought a doll for 40 cents and spent the rest for candy at 20 cents per pound. How many pounds did she buy?

9. A farmer has 90 acres of land. Thirty acres are planted in corn. One-third of the remainder is in wheat. How many acres of wheat has he?

10. A coal-dealer had 50 tons of coal. He burned 30 tons and sold the remainder at $ 4 per ton. How much money did he receive?

11. What shall I have to pay for 8 pounds of 5-cent sugar and 50 cents' worth of eggs?

12. What will be the cost of 2 bags of meal, 100 pounds in each bag, at 2 cents per pound?

13. A woman buys 3 pounds of butter at 30 cents a pound. She gives the grocer a 50-cent piece. How much more must she pay?

14. A man sells 4 acres of land at $20 per acre, taking in payment cows worth $40 each. How many cows does he get?

15. What will be the cost of 4 pieces of silk, 20 yards in a piece, at $\$\frac{1}{2}$ per yard?

16. How much do I pay for 40 marbles, at 8 for 1 cent, and a 25-cent ball?

17. Half a dollar in 5-cent pieces is divided equally among 5 boys. How many does each receive?

18. How many 4-pound packages of sugar at 5 cents a pound can I get for 80 cents?

19. A woman pays 80 cents for gingham at 20 cents per yard. She buys one-fourth as many yards of ribbon. How many yards of ribbon does she buy?

20. A man worked 20 days for $80. If he spent $3 per day, how much a day did he save?

21. What do I pay for $\frac{1}{4}$ lb. of 80-cent tea and a pound of 30-cent coffee?

22. A man owns $\frac{3}{4}$ of a farm of 80 acres. How much has he left after selling 40 acres?

23. If two pictures are worth $40, how much are 3 worth?

24. A man had $60. He spent one-half of it for sheep at $3 each. How many sheep did he buy?

25. A train goes 40 miles per hour. How long will it take to go 480 miles?

26. How many hours are there from half-past 8 in the forenoon to half-past 1 in the afternoon?

HALVES, FOURTHS, AND EIGHTHS.

303. Oral Exercises.

$\frac{2}{2} = ?$	$\frac{4}{4} = ?$	$\frac{8}{8} = ?$	$\frac{3}{2} = ?$	$\frac{5}{4} = ?$
$\frac{6}{4} = ?$	$\frac{7}{4} = ?$	$\frac{8}{4} = ?$	$\frac{9}{8} = ?$	$\frac{10}{8} = ?$
$\frac{11}{8} = ?$	$\frac{12}{8} = ?$	$\frac{13}{8} = ?$	$\frac{14}{8} = ?$	$\frac{15}{8} = ?$
$\frac{1}{2} + \frac{1}{2}$	$\frac{3}{4} + \frac{1}{4}$	$\frac{1}{8} + \frac{7}{8}$	$\frac{3}{8} + \frac{5}{8}$	$\frac{5}{8} + \frac{5}{8}$
$\frac{3}{8} + \frac{3}{8}$	$\frac{7}{8} + \frac{7}{8}$	$\frac{1}{2} + \frac{5}{8}$	$\frac{1}{4} + \frac{7}{8}$	$\frac{7}{8} + \frac{1}{2}$

304. Written Exercises.

Add:

1. $19\frac{1}{2}$ $27\frac{1}{2}$	2. $18\frac{3}{4}$ $65\frac{1}{4}$	3. $25\frac{7}{8}$ $6\frac{1}{8}$	4. $30\frac{5}{8}$ $42\frac{3}{8}$	5. $56\frac{1}{2}$ $24\frac{3}{4}$
6. $12\frac{3}{8}$ $5\frac{1}{4}$ $8\frac{3}{8}$	7. $23\frac{7}{8}$ $6\frac{1}{8}$ $1\frac{1}{8}$	8. $3\frac{3}{8}$ $4\frac{3}{8}$ $4\frac{3}{8}$	9. $3\frac{5}{8}$ $3\frac{5}{8}$ $3\frac{5}{8}$	10. $5\frac{3}{8}$ $7\frac{5}{8}$ $9\frac{7}{8}$

305. Subtract:

1. $10\frac{3}{4}$ $8\frac{1}{2}$	2. $30\frac{2}{3}$ $7\frac{1}{3}$	3. $30\frac{2}{3}$ $9\frac{2}{3}$	4. $40\frac{1}{2}$ $10\frac{1}{4}$	5. $50\frac{3}{4}$ $11\frac{3}{4}$
6. $56\frac{7}{8}$ $25\frac{1}{2}$	7. $74\frac{7}{8}$ $7\frac{1}{4}$	8. $81\frac{7}{8}$ $62\frac{3}{4}$	9. $59\frac{5}{8}$ $58\frac{1}{2}$	10. $28\frac{5}{8}$ $9\frac{1}{4}$

REVIEW.

306. Written Exercises.

NOTE. — First perform the indicated operations on the quantities between the marks of parenthesis.

1. $43+74+68$
2. $(25+33)\times 3\frac{1}{2}$
3. $\frac{3}{4}$ of $(68+52)$
4. $156-(68\frac{1}{2}+17\frac{1}{2})$
5. $\frac{4}{5}$ of $(783-248)$
6. $42\times(84\div 21)$
7. $(\frac{3}{4}\times 8)\times 24$
8. $(144\div 24)+78$
9. $8{,}820\div(42\div 21)$
10. $(\frac{1}{4}$ of $840)\div 14$

307. Written Problems.

1. A man bought $\frac{1}{4}$ of a flock of 120 sheep for $150. How much did each sheep cost him?

2. John had 250 postage stamps. He gave away 64 and lost 36. How many had he left?

3. A farmer had 72 cows. How many had he after twenty-five had died, and he had bought 15?

4. If 72 hats cost $288, how much will 4 hats cost?

5. A grocer sold 15 lb. 8 oz. of tea to one customer and 12 lb. 8 oz. to another. How much tea did he sell to both?

6. A boy had a piece of wire 4 yards long. He cut it up into pieces 1 inch long. How many pieces were there?

7. How much will a druggist receive for 2 gallons of cologne at 80 cents a pint?

8. How many boxes, each containing 8 ounces, will it take to hold 20 pounds of candy?

9. How many inches in 1 yard, 1 foot, 1 inch?

10. A boy had 20 dozen eggs to sell. If he broke $\frac{1}{2}$ dozen on the way to market, how many whole eggs would he have to sell?

11. A dealer bought 10 cows for $500. How much apiece would he have to charge for them to gain $10 on each cow?

12. A girl paid 90 cents for 6 packages of sugar, each containing 3 pounds. How many cents per pound did the sugar cost?

13. At 80 cents a pound, what will 3 ounces of tea cost?

14. A barrel of flour weighs 196 pounds. Find the cost of one-half of it at 3 cents a pound.

15. A newsboy sold 54 papers at 3 cents each. If the papers cost 95 cents, what is his profit?

16. How many 7-pound packages can be made from $\frac{1}{4}$ of a barrel of flour, if there are 196 pounds of flour in a barrel?

17. What will be the total cost of $\frac{1}{4}$ bbl. of flour at $6 per barrel, and 2 pounds of tea at 75¢ per pound?

18. A ton of hay weighs 2,000 pounds. If a man buys $\frac{1}{2}$ ton, how many pounds will he have left after using 250 pounds?

19. Five dozen collars are sold for $9.00. What is the price of one collar?

20. At 32 cents per pound, how much will be paid for 1 pound 7 ounces of butter?

21. What will $\frac{1}{8}$ of a yard of silk cost at the rate of $25.60 for 16 yards?

22. A bag of coffee weighing 80 pounds is put into 20 packages. If it is sold for $1.20 per package, what is the price per pound?

23. Four pieces of calico, each containing 30 yards, are used in making 48 waists. How many yards does it take to make a waist?

24. There are 24 pounds 8 ounces in a bag of flour. How many pounds in 8 bags?

25. 3 yards 1 foot of wire are cut up into 6-inch pieces. How many pieces are there?

MULTIPLIERS ENDING WITH CIPHERS.

308. Oral Exercises.

$100 \times 3 = ?$	$100 \times 6 = ?$	$100 \times 10 = ?$
$100 \times 7 = ?$	$100 \times 9 = ?$	$100 \times 11 = ?$

309. Oral Exercises.

Give answers:

15×100	27×100	35×100	43×100
99×100	100×100	101×100	109×100
678×100	789×100	890×100	901×100
$92 \times 1{,}000$	$68 \times 1{,}000$	$76 \times 1{,}000$	$84 \times 1{,}000$
42×200	33×300	22×400	44×200

310. Written Exercises.

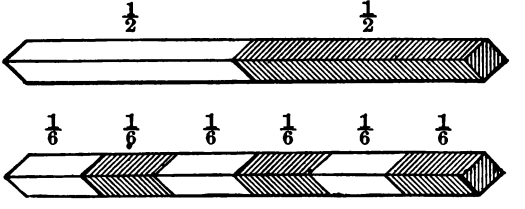
1.	236×300	3.	69×700	5.	$76 \times 1{,}300$
2.	134×500	4.	$82 \times 1{,}200$	6.	$24 \times 3{,}000$
7.	$37 \times 2{,}400$	9.	$43 \times 1{,}800$	11.	187×510
8.	$98 \times 1{,}000$	10.	$33 \times 2{,}700$	12.	97×840

HALVES, THIRDS, AND SIXTHS.

311. Oral Exercises.

When a thing is divided into *two* equal parts, what is each part called?

What is each part called when a thing is divided into *six* equal parts?



Which is greater, one-half or one-sixth? How many sixths of a pie are there in half a pie?

One-sixth of a foot is how many inches? One-half of a foot is how many inches? How many sixths of a foot are there in one-half of a foot? $\frac{1}{2} = \frac{?}{6}$?

One-half + one-sixth = how many sixths?
One-half + two-sixths = how many sixths?
One-half + three-sixths = how many sixths?
One-half + four-sixths = how many sixths?
One-half + five-sixths = how many sixths?

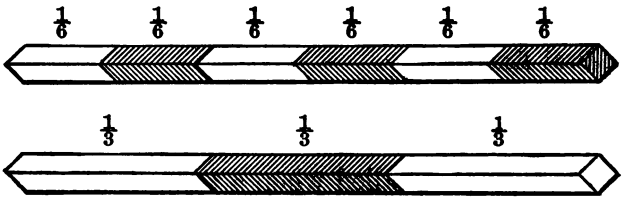
One-third = how many sixths?

Two-thirds = how many sixths?

One-half = how many sixths?

Two-sixths = how many thirds?

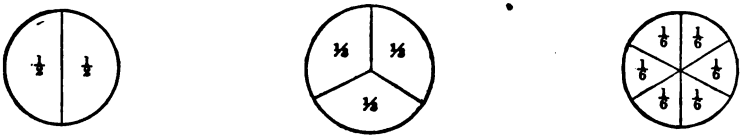
Three-sixths = what? Four-sixths = what?



One-half + one-sixth = how many thirds?

One-half + one-third = how many sixths?

One-third + one-sixth = what?



312. Oral Exercises.

Give answers:

$\frac{1}{2}$	$4\frac{1}{2}$	$\frac{1}{3}$	$5\frac{1}{3}$	$\frac{5}{6}$	$4\frac{5}{6}$
$+\frac{1}{6}$	$+\frac{1}{6}$	$+\frac{1}{6}$	$+\frac{1}{6}$	$+\frac{1}{2}$	$+\frac{1}{2}$
$\frac{1}{2}$	$4\frac{1}{2}$	$\frac{1}{3}$	$5\frac{1}{3}$	$\frac{5}{6}$	$4\frac{5}{6}$
$-\frac{1}{6}$	$-\frac{1}{6}$	$-\frac{1}{6}$	$-\frac{1}{6}$	$-\frac{1}{2}$	$-\frac{1}{2}$

313. Written Exercises.

Add:

1. $4\frac{1}{2}$	2. $5\frac{1}{3}$	3. $6\frac{1}{2}$	4. $10\frac{5}{6}$	5. $12\frac{5}{6}$
$3\frac{1}{6}$	$4\frac{1}{6}$	$9\frac{5}{6}$	$8\frac{1}{2}$	$7\frac{1}{3}$
6. $63\frac{5}{6}$	7. $18\frac{5}{6}$	8. $6\frac{1}{2}$	9. $20\frac{1}{3}$	10. $41\frac{2}{3}$
$20\frac{2}{3}$	$70\frac{2}{3}$	$5\frac{1}{3}$	$19\frac{1}{2}$	$6\frac{1}{2}$
11. $18\frac{1}{3}$	12. $15\frac{1}{6}$	13. $5\frac{1}{6}$	14. $2\frac{1}{2}$	15. $90\frac{5}{6}$
$9\frac{1}{6}$	$10\frac{1}{3}$	$4\frac{1}{2}$	$\frac{1}{2}$	$3\frac{5}{6}$
$8\frac{1}{6}$	$\frac{1}{3}$	$3\frac{1}{6}$	$1\frac{1}{6}$	$2\frac{5}{6}$

314. Subtract:

1. $14\frac{1}{2}$	2. $24\frac{1}{3}$	3. $16\frac{5}{6}$	4. $28\frac{5}{6}$	5. $12\frac{5}{6}$
$5\frac{1}{6}$	$3\frac{1}{6}$	$9\frac{1}{2}$	$6\frac{1}{3}$	$7\frac{1}{6}$
6. 20	7. 30	8. 40	9. 50	10. $60\frac{1}{2}$
$\frac{1}{6}$	$1\frac{1}{6}$	$1\frac{5}{6}$	$2\frac{5}{6}$	$10\frac{1}{3}$
11. $15\frac{1}{2}$	12. $20\frac{1}{3}$	13. $31\frac{5}{6}$	14. $42\frac{5}{6}$	15. $57\frac{5}{6}$
$4\frac{1}{6}$	$5\frac{1}{6}$	$17\frac{1}{2}$	$26\frac{1}{3}$	$40\frac{1}{6}$
16. 27	17. 38	18. 49	19. 54	20. 87
$18\frac{1}{2}$	$9\frac{1}{3}$	$27\frac{1}{4}$	$46\frac{1}{6}$	$86\frac{1}{8}$

LONG DIVISION SIGHT DRILLS.

These drills are intended to give the average pupil a method of obtaining a quotient figure that will be very nearly correct, instead of permitting him to make a series of guesses, which he tests one at a time.

315. Give quotients at sight. Omit remainders when there are any.

160 ÷ 20	360 ÷ 60	560 ÷ 80	210 ÷ 30
240 ÷ 30	490 ÷ 70	350 ÷ 70	270 ÷ 30
280 ÷ 40	720 ÷ 80	300 ÷ 50	200 ÷ 40
450 ÷ 50	450 ÷ 90	360 ÷ 40	350 ÷ 50

The pupil should be led to see if 160 contains 20, 8 times, it will contain 19, which is smaller than 20, at least 8 times. His answer should be 8.

160 ÷ 19	360 ÷ 59	560 ÷ 79	210 ÷ 29
240 ÷ 29	490 ÷ 69	350 ÷ 69	270 ÷ 29
280 ÷ 39	720 ÷ 79	300 ÷ 49	200 ÷ 39
450 ÷ 49	450 ÷ 89	360 ÷ 39	350 ÷ 49

The quotient of 160 by 20, being 8, 160 ÷ 21 must be less than 8. The pupil answers 7.

160 ÷ 21	360 ÷ 61	560 ÷ 81	210 ÷ 31
240 ÷ 31	490 ÷ 71	350 ÷ 71	270 ÷ 31
280 ÷ 41	720 ÷ 81	300 ÷ 51	200 ÷ 41
450 ÷ 51	450 ÷ 91	360 ÷ 41	350 ÷ 51

For the divisors 49, 39, 88, 78, the pupil should mentally substitute 50, 40, 90, 80. For 21, 31, 62, 72, he should mentally substitute 20, 30, 60, 70. He should then multiply 21, 62, etc., by the resulting figure to ascertain its correctness.

449 ÷ 90	251 ÷ 49	269 ÷ 31	672 ÷ 82
641 ÷ 80	242 ÷ 39	364 ÷ 41	546 ÷ 88
559 ÷ 70	271 ÷ 29	324 ÷ 62	721 ÷ 78
359 ÷ 60	149 ÷ 21	583 ÷ 72	351 ÷ 68

While the pupils should give answers rapidly to the first three sets, they should be allowed more time to give answers to this set and the preceding one.

301 ÷ 43	192 ÷ 24	748 ÷ 75	396 ÷ 66
231 ÷ 33	270 ÷ 34	757 ÷ 85	423 ÷ 47
184 ÷ 23	351 ÷ 44	819 ÷ 86	296 ÷ 37
120 ÷ 13	585 ÷ 65	325 ÷ 76	243 ÷ 27

316. Written Exercises.

Divide:

1.	756 ÷ 14	11.	6,055 ÷ 93	21.	9,409 ÷ 97
2.	864 ÷ 16	12.	9,025 ÷ 95	22.	9,108 ÷ 99
3.	968 ÷ 22	13.	9,738 ÷ 18	23.	8,356 ÷ 36
4.	576 ÷ 24	14.	6,048 ÷ 28	24.	9,428 ÷ 54
5.	1,024 ÷ 32	15.	9,756 ÷ 36	25.	9,804 ÷ 72
6.	1,536 ÷ 34	16.	5,434 ÷ 38	26.	8,429 ÷ 64
7.	1,806 ÷ 42	17.	8,464 ÷ 46	27.	5,784 ÷ 48
8.	2,860 ÷ 44	18.	5,184 ÷ 48	28.	8,515 ÷ 28
9.	4,212 ÷ 52	19.	9,072 ÷ 56	29.	9,843 ÷ 42
10.	4,428 ÷ 54	20.	8,816 ÷ 58	30.	7,349 ÷ 63

DIVISORS ENDING WITH CIPHERS.

317. Preliminary Exercises.

Divide:

900 by 100.	1,100 by 100.	1,200 by 100.
$16 \times 100 = ?$	$1{,}600 \div 100 = ?$	$25 \times 100 = ?$
	$2{,}500 \div 100 = ?$	

How do we multiply a number by 100? How can we divide by 100 a number that ends with two ciphers?

318. Oral Exercises.

Give answers:

$2{,}800 \div 100$	$9{,}000 \div 100$	$7{,}200 \div 100$
$2{,}800 \div 200$	$1{,}200 \div 600$	$66{,}000 \div 11{,}000$
$3{,}200 \div 400$	$4{,}000 \div 800$	$48{,}000 \div 12{,}000$

319. Written Exercises.

Divide 87,600 by 600.

6ØØ)87ØØ 146 quotient.	Strike out the same number of ciphers in the divisor and the dividend.

1. $40{,}800 \div 300$
2. $17{,}000 \div 500$
3. $78{,}300 \div 900$
4. $72{,}000 \div 3{,}000$
5. $60{,}000 \div 2{,}400$
6. $87{,}000 \div 1{,}000$

320. Oral Exercises.

Give answers:

1. $806 \div 100$
2. $806 \div 400$
3. $1{,}896 = 300$
4. $2{,}856 \div 700$
5. $4{,}050 \div 800$
6. $2{,}719 \div 900$
7. $2{,}817 \div 1{,}400$
8. $4{,}235 \div 2{,}100$
9. $9{,}393 \div 3{,}100$

321. $9{,}637 \div 300$

$3|00)96|37$

$32\frac{37}{300}$

$8{,}975 \div 200$

$2|00)89|75$

$44\frac{175}{200}$

$19{,}575 \div 1{,}600$

$12\frac{375}{1600}$

$16|00)195|75$

16

35

32

3

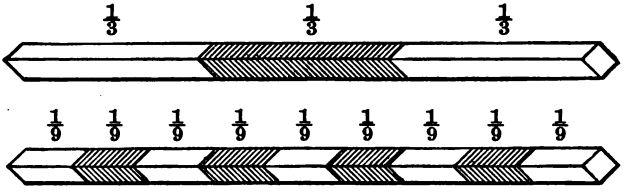
322. Written Exercises.

1. $40{,}890 \div 300$
2. $59{,}532 \div 500$
3. $62{,}700 \div 700$
4. $72{,}194 \div 800$
5. $88{,}635 \div 1{,}000$
6. $12{,}815 \div 1{,}400$
7. $99{,}364 \div 1{,}300$
8. $98{,}152 \div 2{,}100$
9. $85{,}416 \div 1{,}600$
10. $91{,}152 \div 1{,}700$
11. $11{,}002 \div 1{,}300$
12. $69{,}859 \div 15{,}000$
13. $79{,}999 \div 17{,}000$
14. $88{,}321 \div 19{,}000$
15. $96{,}969 \div 23{,}000$
16. $66{,}123 \div 14{,}000$
17. $48{,}247 \div 13{,}000$
18. $90{,}014 \div 21{,}000$
19. $38{,}347 \div 16{,}000$
20. $46{,}101 \div 15{,}000$

THIRDS AND NINTHS.

323. Preliminary Exercises.

When a thing is divided into *nine* equal parts, each part is called a *ninth*.



One-third of a yard contains how many inches? How many inches in one-ninth of a yard? One-third = how many ninths? Two-thirds = how many ninths? One-third and one-ninth = how many ninths?

One-third + one-ninth = how many ninths?
One-third + two-ninths = how many ninths?
One-third + four-ninths = how many ninths?
One-third + five-ninths = how many ninths?
One-third + seven-ninths = how many ninths?
One-third + eight-ninths = how many ninths?

2 thirds + 1 ninth = how many 9ths?
2 thirds + 2 ninths = how many 9ths?
2 thirds + 4 ninths = how many 9ths?
2 thirds + 5 ninths = how many 9ths?
2 thirds + 7 ninths = how many 9ths?
2 thirds + 8 ninths = how many 9ths?

$\frac{3}{9} = \frac{?}{3}$ $\frac{6}{9} = \frac{?}{3}$ $\frac{10}{9} = 1\frac{?}{9}$ $\frac{11}{9} = 1\frac{?}{9}$ $\frac{13}{9} = 1\frac{?}{9}$

$\frac{14}{9} = ?$ $\frac{16}{9} = ?$ $\frac{17}{9} = ?$ $\frac{12}{9} = ?$ $\frac{18}{9} = ?$

324. Written Exercises.

Add:

1. $18\frac{1}{9}$	2. $27\frac{2}{9}$	3. $16\frac{1}{9}$	4. $33\frac{1}{3}$	5. $66\frac{2}{3}$
$9\frac{4}{9}$	$20\frac{5}{9}$	$35\frac{7}{9}$	$5\frac{1}{9}$	$\frac{1}{9}$
6. $95\frac{2}{9}$	7. $5\frac{4}{9}$	8. $37\frac{1}{3}$	9. $14\frac{1}{3}$	10. $25\frac{2}{3}$
$3\frac{7}{9}$	$17\frac{5}{9}$	$6\frac{7}{9}$	$55\frac{8}{9}$	$1\frac{4}{9}$
11. $1\frac{1}{9}$	12. $6\frac{2}{9}$	13. $13\frac{4}{9}$	14. $6\frac{2}{9}$	15. $10\frac{4}{9}$
$2\frac{2}{9}$	$5\frac{4}{9}$	$8\frac{7}{9}$	$21\frac{7}{9}$	$10\frac{4}{9}$
$3\frac{4}{9}$	$11\frac{5}{9}$	$\frac{5}{9}$	$3\frac{8}{9}$	$10\frac{4}{9}$

325. Subtract:

1. $6\frac{8}{9}$	2. $30\frac{7}{9}$	3. $27\frac{5}{9}$	4. $93\frac{4}{9}$	5. $77\frac{7}{9}$
$3\frac{5}{9}$	$4\frac{4}{9}$	$6\frac{1}{3}$	$89\frac{1}{3}$	$33\frac{1}{3}$
6. 50	7. 60	8. 70	9. 80	10. 90
$9\frac{1}{3}$	$11\frac{4}{9}$	$13\frac{1}{2}$	$15\frac{5}{9}$	$17\frac{7}{9}$

SPECIAL DRILLS.

326. Give sums:

30 + 80	500 + 400	370 + 20	477 + 7
20 + 90	200 + 700	410 + 80	70 + 60
80 + 70	400 + 300	275 + 10	80 + 90
90 + 50	130 + 60	183 + 9	60 + 50
300 + 600	240 + 30	672 + 8	90 + 70

327. Give differences:

150 − 90	800 − 300	390 − 360	484 − 477
160 − 70	700 − 400	450 − 20	100 − 30
140 − 60	600 − 200	285 − 10	170 − 80
120 − 50	190 − 130	192 − 183	130 − 60
900 − 600	270 − 40	670 − 8	110 − 20

328. Give products:

30×8	300×3	90×5	$70 \times \frac{6}{7}$
20×9	400×2	50×6	111×5
40×4	200×3	$90 \times \frac{2}{3}$	222×4
70×3	60×7	$80 \times \frac{3}{4}$	333×3
200×4	80×2	$60 \times \frac{2}{3}$	444×2

329. Give quotients:

240 ÷ 8	180 ÷ 20	800 ÷ 200	600 ÷ 2
180 ÷ 9	160 ÷ 40	600 ÷ 300	666 ÷ 111
160 ÷ 4	210 ÷ 70	800 ÷ 2	999 ÷ 3
210 ÷ 3	800 ÷ 400	900 ÷ 3	888 ÷ 222
240 ÷ 30	900 ÷ 300	800 ÷ 4	777 ÷ 7

330. Give results:

$\frac{1}{2} + \frac{1}{6}$	$\frac{1}{2} - \frac{1}{6}$	$60 \times 1\frac{1}{2}$	$1 \div \frac{1}{2}$	$\frac{4}{5}$ of 50
$\frac{1}{2} + \frac{1}{4}$	$\frac{1}{2} - \frac{1}{4}$	$60 \times 1\frac{1}{3}$	$2 \div \frac{1}{2}$	$\frac{7}{8}$ of 80
$\frac{1}{3} + \frac{1}{6}$	$\frac{1}{3} - \frac{1}{6}$	$60 \times 1\frac{1}{5}$	$3 \div \frac{1}{2}$	$\frac{2}{3}$ of 90
$\frac{1}{3} + \frac{1}{9}$	$\frac{1}{3} - \frac{1}{9}$	$60 \times 1\frac{1}{6}$	$4 \div \frac{1}{2}$	$\frac{3}{4}$ of 80

MULTIPLIERS OF MORE THAN TWO FIGURES.

331. Multiply 249 by 397.

First multiply by 7 units, placing the right-hand figure of the product under the 7 of the multiplier. Then multiply by 9 tens, placing the right-hand figure of the product in the tens' place, under the 9 of the multiplier. Next, multiply by 3 hundreds, placing the right-hand figure of the product in the hundreds' place, under the 3 of the multiplier. Draw a line, and add.

249
397
1743
2241
747
98853

Multiply:

1. 426 by 234.
2. 347 by 276.
3. 615 by 153.
4. 723 by 134.
5. 809 by 123.
6. 352 by 246.
7. 634 by 148.
8. 536 by 148.
9. 379 by 254.
10. 354 by 267.
11. 724 by 129.
12. 276 by 333.
13. 568 by 154.
14. 241 by 398.

332. Divide:

1. 8,643 by 201.
2. 9,696 by 303.
3. 7,056 by 504.
4. 7,891 by 607.
5. 9,684 by 807.
6. 8,199 by 911.
7. 9,269 by 713.
8. 6,708 by 516.
9. 7,291 by 317.
10. 7,326 by 222.
11. 9,872 by 1,234.
12. 8,142 by 1,357.

333. Multiply 456 by 209.

Place, as before, the right-hand figure of the product by 9 units under the 9 of the multiplier, and the right-hand figure of the product by 2 hundreds under the 2 of the multiplier.

$$\begin{array}{r} 456 \\ 209 \\ \hline 4104 \\ 912 \\ \hline 95304 \end{array}$$

Multiply:

NOTE. — Either number may be taken as the multiplier.

1. 903 by 107
2. 691 by 140
3. 827 by 103
4. 314 by 206
5. 808 by 121
6. 671 by 105
7. 704 by 123
8. 351 by 204
9. 499 by 198
10. 47 by 2,023
11. 49 by 2,005
12. 368 by 204

334. Find products:

1. $42 \times 2\frac{1}{2}$
2. $56 \times 1\frac{3}{4}$
3. $18 \times 3\frac{5}{6}$
4. $40 \times 2\frac{3}{8}$
5. $27 \times 3\frac{4}{9}$
6. $35 \times 4\frac{2}{5}$
7. $48 \times 7\frac{2}{3}$
8. $8 \times 12\frac{1}{2}$
9. $20 \times 10\frac{1}{4}$
10. $30 \times 10\frac{2}{3}$
11. $50 \times 13\frac{1}{2}$
12. $40 \times 15\frac{3}{8}$

RECTANGLES.

335. Preliminary Exercises.

1. Draw on the blackboard a square whose side measures one foot. Its area is one square foot.

2. Draw on the blackboard a rectangle three feet long, two feet wide. Divide it into one-foot squares.

3. How many one-foot squares would be contained in a rectangle six feet long, five feet wide?

4. How many feet in the perimeter of a rectangle 24 inches wide, 36 inches long?

5. Find the area in square feet of a rectangle 24 inches wide, 36 inches long. First change each side to feet.

> The number of square feet in the surface, or the area, of a rectangle is equal to the number of feet in its length multiplied by the number of feet in its breadth.

336. Oral Exercises.

1. Find the area of a square whose side measures 11 feet.

2. What is the side of a square whose area is 144 square feet?

3. Find the perimeter of a square whose area is 81 square feet.

4. A rectangle is 4 feet long, 3 feet 6 inches wide. How many square feet does it contain?

5. How many square feet in the ceiling of a room 24 feet long, 20 feet wide?

6. How many one-inch squares in a two-inch square? How many two-inch squares in a six-inch square?

7. How many square inches in a rectangle 1 foot 9 inches long, 9 inches broad?

8. Find the perimeter of the above rectangle in feet.

9. A man owns a lot measuring 25 feet along the street and 100 feet deep. How many square feet does it contain?

10. How many square feet of paper will be needed to cover the ceiling of a room 16 feet long, $10\frac{1}{2}$ feet wide?

337. Written Exercises.

1. A blackboard is 14 feet long and $4\frac{1}{2}$ feet high. How many square feet in its surface?

2. Find the number of square inches in the surface of a pane of glass 16 inches long, $12\frac{3}{4}$ inches wide.

3. Find the area of a square whose perimeter is 64 feet.

4. Find the perimeter and the area of a rectangle 68 feet long, $36\frac{3}{4}$ feet wide.

5. How many 7-foot squares are there in a 21-foot square?

6. How many feet of wire fence will be needed to enclose a plot of ground 24 feet 6 inches long, 18 feet 9 inches wide?

7. How many 3-inch squares can be cut from a 12-inch square?

8. Give the dimensions in whole numbers of a rectangle containing 77 square inches.

9. The area of a rectangle is 156 square inches. One side is 12 inches. What is the other?

10. Find the perimeter of a rectangle having an area of 156 square inches and one side measuring 13 inches.

CHAPTER V.

MULTIPLIERS AND DIVISORS OF THREE OR MORE FIGURES. — ADDITION AND SUBTRACTION OF EASY FRACTIONS. — MULTIPLICATION BY A MIXED NUMBER. — EASY DENOMINATE NUMBERS. — AREAS OF RECTANGLES.

MULTIPLICATION.

338. Multiply 48 by $26\frac{3}{4}$.

48 $26\frac{3}{4}$ 4)144 36 288 96 1284	To multiply by $\frac{3}{4}$, we can find one-fourth, and multiply the result by 3. $\frac{1}{4}$ of 48 is 12. $\frac{3}{4}$ of $48 = 12 \times 3 = 36$. It will generally be found better to multiply first and then to divide. $48 \times 3 = 144$. $\frac{1}{4}$ of $144 = 36$. The right-hand figure of the product by 6 units is placed under the 6. The right-hand figure of the product by 2 hundreds is placed under the 2.

126 $84\frac{2}{3}$ 3)252 84 504 1008 10,668	248 $130\frac{7}{8}$ 8)1736 217 744 248 32,457	375 $206\frac{3}{4}$ 4)1125 $281\frac{1}{4}$ 2250 750 $77,531\frac{1}{4}$

Multiply:

1. $27 \times 13\frac{1}{3}$
2. $48 \times 16\frac{2}{3}$
3. $75 \times 23\frac{3}{5}$
4. $126 \times 18\frac{1}{2}$
5. $328 \times 45\frac{3}{8}$
6. $295 \times 75\frac{2}{5}$
7. $198 \times 33\frac{2}{9}$
8. $770 \times 56\frac{1}{11}$
9. $1{,}236 \times 14\frac{1}{2}$
10. $360 \times 70\frac{2}{9}$
11. $720 \times 90\frac{5}{6}$
12. $960 \times 100\frac{7}{12}$
13. $49 \times 25\frac{1}{4}$
14. $50 \times 33\frac{2}{3}$
15. $76 \times 24\frac{3}{5}$

LONG DIVISION.

339. Written Exercises.

1. 97,712 ÷ 31
2. 81,600 ÷ 51
3. 99,755 ÷ 71
4. 94,185 ÷ 91
5. 87,978 ÷ 43
6. 91,520 ÷ 65
7. 92,220 ÷ 87
8. 94,685 ÷ 29
9. 98,172 ÷ 202
10. 99,788 ÷ 404
11. 93,930 ÷ 606
12. 99,384 ÷ 808
13. 86,478 ÷ 213
14. 88,305 ÷ 435
15. 95,922 ÷ 657
16. 90,195 ÷ 859
17. 96,048 ÷ 2,001
18. 96,072 ÷ 4,003
19. 96,080 ÷ 6,005
20. 96,084 ÷ 8,007
21. 98,196 ÷ 1,002
22. 92,550 ÷ 1,234
23. 79,488 ÷ 3,456
24. 81,216 ÷ 20,304

SPECIAL DRILLS.

340. Give sums:

56 + 17	18 + 42	26 + 16	29 + 15
13 + 78	65 + 15	13 + 29	59 + 17
25 + 16	14 + 18	76 + 15	18 + 45
18 + 25	67 + 17	18 + 56	34 + 19
48 + 19	14 + 36	48 + 12	18 + 27

341. Give differences:

$66-19$	$90-19$	$94-76$	$84-67$
$56-39$	$67-48$	$60-18$	$42-29$
$60-12$	$80-15$	$67-19$	$32-14$
$66-47$	$80-65$	$60-48$	$91-78$
$41-25$	$50-14$	$41-16$	$94-18$

342. Give products:

13×4	4×19	8×90	14×3
19×5	5×17	8×81	18×4
24×4	4×23	7×14	16×5
15×3	5×15	6×16	15×6
14×6	7×31	5×18	13×7

343. Give quotients:

$42\div3$	$78\div13$	$205\div41$	$81\div3$
$91\div7$	$75\div15$	$568\div71$	$60\div4$
$56\div4$	$90\div18$	$279\div31$	$98\div7$
$90\div6$	$78\div26$	$427\div61$	$70\div5$
$75\div5$	$92\div23$	$459\div51$	$48\div3$

344. Give remainders:

$4-3\frac{1}{4}$	$80-\frac{1}{4}$	$40-2\frac{3}{4}$	$8\frac{1}{3}-1\frac{1}{6}$
$25\frac{3}{4}-5\frac{1}{4}$	$40-1\frac{3}{4}$	$7\frac{1}{3}-1\frac{1}{9}$	$16\frac{3}{4}-3\frac{1}{2}$
$60-1\frac{1}{2}$	$6\frac{1}{2}-1\frac{1}{3}$	$17\frac{1}{2}-13\frac{1}{4}$	$80-1\frac{1}{4}$
$4\frac{1}{2}-1\frac{1}{6}$	$8\frac{1}{2}-5\frac{1}{4}$	$40-\frac{3}{4}$	$40-10\frac{3}{4}$
$20-19\frac{3}{4}$	$60-\frac{1}{2}$	$40-3\frac{3}{4}$	$9\frac{5}{6}-1\frac{2}{3}$

345. Oral Problems.

1. If 3 yards of cambric cost 63 cents, what will be the cost of 4 yards?

2. How much will be paid for 12 pounds of 6-cent sugar and a 15-cent bar of soap?

3. How many quarts of milk in 24 gallons?

4. A piece of cloth measures 45 feet. How many yards does it contain?

5. At 5 cents per ounce, what will be the cost of a pound of cinnamon?

6. Bought 6 pounds of 6-cent sugar. How much change from a half-dollar?

7. Gave five dollars in payment for 9 yards of silk, at 60 cents a yard. How much do I still owe?

8. If $\frac{1}{2}$ pound of candy costs 10 cents, how much must I pay for 4 pounds?

9. Gave $\frac{1}{3}$ of a pie to John, and $\frac{1}{6}$ to Daniel. How much of the pie remained?

10. I divided 3 apples into quarters. How many pieces did I make?

11. What will be the total cost of three 50-cent balls and five 10-cent bats?

12. A conductor charges 84 cents fare for a ride of 28 miles. What is the rate per mile?

13. How many feet have 15 hens and 10 dogs?

14. Paid 15 cents for a quart of syrup. What is the price per gallon?

15. How much is received for a bushel of potatoes sold at 15 cents per $\frac{1}{2}$ peck? (1 bushel = 4 pecks.)

16. I paid 21 cents for sugar, 15 cents for coffee, and 30 cents for tea. How much did I pay for all?

17. What will be the cost of 4 pounds of cheese, at 18 cents per pound?

18. When eggs are selling for 30 cents per dozen, how many eggs can be bought for 90 cents?

19. If a bushel of wheat weighs 60 pounds, how many bushels are there in 540 pounds of wheat?

20. A dealer paid $96 for 16 sheep. What was the price of one sheep?

21. A boy had 35 postage stamps, and bought 16 more. How many had he then?

22. Find the cost of 36 two-cent stamps.

23. When muslin is 5 cents a yard, how many yards can be bought for 80 cents?

24. A storekeeper sold from a 10-pound box of candy $\frac{1}{2}$ pound to one customer, and $\frac{3}{4}$ pound to another. How much candy remained?

25. A boy pays 15 cents for 3 quarters of a pie. What is the cost of 1 quarter? How much does the whole pie cost?

346. Written Problems.

1. Paid $5.25 for 3 yards of silk. What will be the cost of 4 yards?

2. I bought 27 lb. of 6-ct. sugar, and 8 bars of soap at 15¢ per bar. What is my bill?

3. How many pints of milk in 24 gallons?

4. A piece of cloth measures 720 inches. How many yards does it contain?

5. At 3 cents per ounce, what would be the cost of 5 pounds of pepper?

6. Bought 16 pounds of 60-cent tea. How much change do I get from a $10 bill?

7. Gave $25 in payment for 16 yards of silk, at 1\frac{3}{4}$ per yard. How much do I still owe?

8. If $\frac{1}{2}$ yard of cloth costs 75 cents, what is the cost of $1\frac{1}{2}$ yards?

9. A piece of linen measures $12\frac{1}{4}$ yards. How much will be left after selling $5\frac{1}{2}$ yards and $4\frac{1}{2}$ yards?

10. How many quarters in $27?

11. What will be the cost of 4 coats at $15 each, and 5 hats at $2.50 each?

12. Two towns are 150 miles apart. If the fare is $4.50, what is the rate per mile?

13. How many feet have 17 hens and 13 dogs?

14. Paid 15 cents for a quart of molasses. What would be the cost, at the same rate, of 13 gallons?

15. How much is received for a barrel of potatoes, containing 3 bushels, sold at the rate of 10 cents per half-peck?

16. Find the cost of $7\frac{1}{2}$ lb. sugar at 6 cents per pound, $1\frac{1}{4}$ lb. coffee at 28¢ per pound, and $\frac{1}{4}$ lb. 60-cent tea.

17. How much must be paid for $24\frac{3}{4}$ yards of muslin at 4 cents per yard?

18. When eggs are worth 25 cents per dozen, how many eggs can be bought for $1? For $3?

19. A bushel of corn weighs 56 pounds. How many bushels are there in a load weighing 2,240 pounds?

20. A farmer pays $1,500 for 25 cows. What is the price of each cow?

21. A boy had 276 butterflies after 137 had been destroyed. How many had he at first?

22. Find the total cost of 18 one-cent stamps, 13 two-cent stamps, 10 three-cent stamps, and 5 five-cent stamps.

23. When muslin is 5 cents a yard, how many yards can be bought for $6\frac{1}{2}$?

24. From a farm of 100 acres, $75\frac{3}{4}$ acres and $16\frac{1}{2}$ acres were sold. How many acres remain?

25. I paid $5.25 for 3 quarters of a yard of velvet. What was the cost of 1 quarter of a yard?

MULTIPLICATION.

347. Written Exercises.

Use either number as a multiplier.

1.	$3{,}976 \times 23$	9.	$126 \times 4\frac{1}{2}$	17.	105×589
2.	$2{,}879 \times 34$	10.	$168 \times 6\frac{2}{3}$	18.	158×612
3.	$1{,}987 \times 45$	11.	$108 \times 8\frac{3}{4}$	19.	137×723
4.	$1{,}593 \times 56$	12.	$136 \times 9\frac{7}{8}$	20.	116×834
5.	$1{,}488 \times 67$	13.	$72 \times 20\frac{1}{5}$	21.	103×967
6.	$1{,}059 \times 78$	14.	779×128	22.	$64 \times 31\frac{1}{4}$
7.	$1{,}097 \times 89$	15.	388×256	23.	$128 \times 187\frac{1}{2}$
8.	$80 \times 2\frac{9}{10}$	16.	209×478	24.	$144 \times 666\frac{2}{3}$

MIXED NUMBERS.

348. Oral Review Exercises.

1.	$4\frac{3}{4}$	2.	$3\frac{3}{4}$	3.	$4\frac{1}{2}$	4.	$7\frac{1}{2}$	5.	$8\frac{5}{6}$
	$-4\frac{1}{2}$		$+5\frac{1}{8}$		$+2\frac{3}{8}$		$+\frac{1}{6}$		$-5\frac{1}{3}$
6.	$1\frac{2}{3}$	7.	$7\frac{1}{2}$	8.	$5\frac{3}{4}$	9.	$3\frac{7}{8}$	10.	$2\frac{3}{8}$
	$+3\frac{1}{3}$		$+2\frac{1}{2}$		$+6\frac{1}{4}$		$+7\frac{1}{8}$		$+9\frac{5}{8}$
11.	5	12.	8	13.	7	14.	9	15.	1
	$-3\frac{1}{4}$		$-4\frac{3}{4}$		$-2\frac{1}{3}$		$-4\frac{2}{3}$		$-\frac{1}{6}$
16.	5	17.	7	18.	9	19.	6	20.	8
	$-1\frac{1}{9}$		$-2\frac{2}{9}$		$-3\frac{4}{9}$		$-4\frac{5}{9}$		$-5\frac{7}{9}$

349. Written Exercises.

Add:

1. $56\frac{3}{4}$	2. $83\frac{3}{4}$	3. $64\frac{1}{2}$	4. $87\frac{1}{2}$	5. $65\frac{1}{3}$
$72\frac{1}{2}$	$9\frac{1}{8}$	$15\frac{3}{8}$	$10\frac{1}{6}$	$3\frac{5}{6}$
6. $57\frac{3}{4}$	7. $75\frac{1}{4}$	8. $\frac{1}{2}$	9. $23\frac{1}{3}$	10. $6\frac{2}{3}$
$5\frac{3}{8}$	$6\frac{1}{8}$	$29\frac{1}{3}$	$8\frac{1}{9}$	$15\frac{2}{3}$
$1\frac{1}{2}$	$9\frac{5}{8}$	$65\frac{1}{6}$	$6\frac{1}{3}$	$3\frac{2}{3}$

350. Subtract:

1. $70\frac{1}{4}$	2. $37\frac{1}{2}$	3. $45\frac{3}{4}$	4. 59	5. $63\frac{3}{4}$
$6\frac{1}{8}$	$9\frac{3}{8}$	$8\frac{5}{8}$	$23\frac{7}{8}$	$9\frac{1}{2}$
6. $27\frac{1}{3}$	7. $16\frac{2}{3}$	8. 37	9. 79	10. 23
$19\frac{1}{9}$	$10\frac{1}{6}$	$18\frac{1}{2}$	$35\frac{1}{3}$	$10\frac{1}{4}$

351. Written Exercises.

Divide:

1. $60{,}000 \div 21$	9. $18{,}589 \div 102$	17. $20{,}998 \div 813$
2. $50{,}239 \div 41$	10. $46{,}187 \div 301$	18. $30{,}308 \div 1{,}009$
3. $60{,}396 \div 61$	11. $91{,}074 \div 503$	19. $15{,}630 \div 3{,}007$
4. $57{,}831 \div 81$	12. $73{,}490 \div 705$	20. $98{,}592 \div 5{,}005$
5. $54{,}004 \div 33$	13. $63{,}630 \div 906$	21. $17{,}584 \div 7{,}003$
6. $42{,}177 \div 52$	14. $48{,}000 \div 219$	22. $35{,}445 \div 9{,}001$
7. $35{,}409 \div 74$	15. $17{,}691 \div 417$	23. $39{,}706 \div 13{,}235$
8. $25{,}692 \div 92$	16. $96{,}693 \div 615$	24. $71{,}028 \div 11{,}838$

352. Oral Problems.

1. A woman paid 46 cents for 2 yards of dress material. How many yards could she buy for 69 cents?

2. A girl had $\frac{1}{2}$ yard of ribbon. After using $\frac{1}{3}$ yard for a bow, how much had she left?

3. How many inches in $\frac{5}{6}$ yard?

4. Find the cost of 2 lb. coffee at 20 cents per pound and $\frac{3}{4}$ lb. 80-cent tea.

5. If the cost of 2 thirds of a yard of silk is 60 cents, what is the cost of 1 third of a yard?

6. How much must be paid for 1 yard, 1 foot, and 1 inch of wire at 1 cent an inch?

7. When candy is worth 40 cents a pound, how much can be bought for 60 cents?

8. A grocer puts up a pound and a half of tea into quarter-pound packages. How many packages are there?

9. How many pints are there in $\frac{7}{8}$ of a gallon?

10. Out of a flock of 75 sheep 58 were sold. How many remain?

11. A girl gave a half-dollar in payment for a 15-cent doll. How much change did she receive?

12. When syrup costs 48 cents a gallon, find the total cost of a gallon, a quart, and a pint.

13. How many days will $10\frac{1}{2}$ pounds of butter last, if $\frac{1}{2}$ pound is used each day?

14. How many gallons in 360 quarts?

15. How many pounds and ounces of tea will remain in a 7-pound package after 3 pounds 8 ounces have been sold?

353. Dry Measure.

8 quarts (qt.)	1 peck (pk.)
4 pecks	1 bushel (bu.)

16. How many quarts in $\frac{1}{2}$ bushel?

17. How many bushels in 64 quarts?

18. How many pecks are there in a barrel containing $2\frac{1}{2}$ bushels?

19. At 5 cents per quart, what would be the cost of a bushel of chestnuts?

20. How many cents in $\frac{4}{5}$ of a dollar?

21. What will be the cost of a half-dozen oranges at the rate of 2 oranges for 3 cents?

22. When butter is worth 16 cents a half-pound, how much should be paid for 11 ounces?

23. If 3 pounds of sugar cost 18 cents, how many pounds can be bought for 72 cents?

24. Five men can do a piece of work in 15 days. How long would it take one man to do the same work?

25. When muslin costs 8 cents a yard, what part of a yard can be bought for 2 cents? For 4 cents? 6 cents? 7 cents?

354. Written Problems.

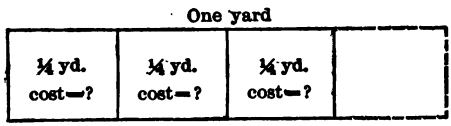
1. A barrel of flour contains 196 pounds. How many barrels can be filled from 6,076 pounds of flour?

2. From a piece of cloth containing $45\frac{7}{8}$ yards there are sold $14\frac{1}{8}$, $13\frac{1}{4}$, and $12\frac{1}{2}$ yards. How many yards remain?

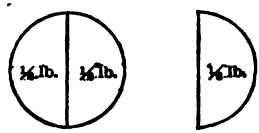
3. How many inches are there in $10\frac{5}{9}$ yards?

4. A woman spends a dollar for $6\frac{1}{2}$ yards of calico at 8 cents a yard, and some ribbon at 32 cents a yard. How much ribbon did she buy?

5. A storekeeper charges 75 cents for 3 quarters of a yard of silk. How much does he charge for each quarter of a yard? What is the price per yard?



6. A grocer sells a pound print of butter and a half of a pound print for 48 cents. How much does the half-pound print cost?



7. Find the amount paid for 1 yard, 1 foot, 1 inch of ribbon at 72 cents per yard.

8. When candy is worth 20 cents a half-pound, how much can be bought for $1.40?

9. How many pints are there in $4\frac{7}{8}$ gallons?

10. Seventy-five sheep remain in a flock after 29 are killed and 41 are sold. How many sheep were in the flock?

11. A girl gave a $ 5-bill in payment for four 75-cent dolls. How much change did she receive?

12. When milk costs 24 cents a gallon, find the cost of 3 gallons, 3 quarts, and 1 pint.

13. How many weeks will 21 pounds of butter last if $\frac{1}{2}$ pound is used each day?

14. How many gallons in 280 pints?

15. From a 40-pound box of tea 29 lb. 11 oz. have been sold. How many pounds and ounces remain?

16. How much does a grocer receive for a barrel of potatoes containing $2\frac{1}{2}$ bushels, which he sells for 5¢ a quarter of a peck?

17. Find the weight of 1 bu. 1 pk. 1 qt. oats that weigh 32 pounds to the bushel.

18. What will be the cost of 240 pounds of wheat at 90 cents per bushel of 60 pounds?

19. Fifteen men finish a piece of work in 10 days. How long would it take 1 man? How long would it take 50 men?

20. Chestnuts are bought at $ 1.15 a bushel. How much is gained on a bushel by selling them at 10 cents a quart?

21. A farmer raised $57\frac{3}{4}$ bushels of wheat. He used $10\frac{1}{4}$ bushels for flour and kept $8\frac{1}{2}$ bushels for seed. How much did he receive for the remainder at $ 1 per bushel?

22. Find the cost of 12 overcoats at $ 18.75 each.

23. I paid $ 54 for 2 dozen hats. What did the hats cost apiece?

24. A tub of butter weighs, with the tub, $42\frac{3}{4}$ lb. The tub weighs $8\frac{1}{2}$ lb. How much is the butter worth at 24 cents per lb.?

25. Find the loss on 12 cows bought for $\$700$ and sold at $\$55$ each.

NOTATION AND NUMERATION.

355. Write in figures:

One hundred thousand. Two hundred thousand. Three hundred thousand. Four hundred thousand. Five hundred thousand. Six hundred thousand. Seven hundred thousand. Eight hundred thousand. Nine hundred thousand.

356. Read the following:

1. 100,000	4. 405,600	7. 756,400
2. 200,350	5. 550,000	8. 864,370
3. 304,000	6. 675,000	9. 999,999

357. Write in figures:

1. Eight thousand, three hundred twenty-five.
2. Eighty-eight thousand, three hundred twenty-five.
3. Eight hundred eighty-eighty thousand, three hundred twenty-five.
4. Six hundred seven thousand, four hundred eleven.
5. Eight hundred sixty thousand, eighty-six.
6. Seven hundred nine.

7. Four hundred twenty thousand, nineteen.
8. Thirty-five thousand, six hundred one.
9. Two hundred thousand, five.
10. Five hundred eleven thousand, eighty.

358. Write in Roman numerals:

1. One hundred eighty.
2. Two hundred fifty-nine.
3. Three hundred seventeen.
4. One hundred ninety-nine.
5. Two hundred sixty-four.
6. Ninety-nine.

359. Read the following:

40,252	67,226	52,321	40,008	63,070
468,800	120,645	242,598	101,200	434,759
514,868	50,250	105,709	39,100	9,009
156,017	721,809	500,746	171,118	4,226
CCCIX	CLXXIV	XCVIII	LXXVII	CXLIX

360. Written Exercises.

Add across. Add down.

1 +	2 +	3 +	4 +	5 = ?	
20 +	30 +	40 +	50 +	60 = ?	
300 +	400 +	500 +	600 +	700 = ?	
4,000 +	5,000 +	6,000 +	7,000 +	8,000 = ?	
50,000 +	60,000 +	70,000 +	80,000 +	90,000 = ?	
100,000 +	200,000 +	100,000 +	200,000 +	100,000 = ?	
? +	? +	? +	? +	?	= ?

361. Add down. Subtract across.

9 −	6 = ?	8 −	3 = ?
80 −	50 = ?	70 −	20 = ?
700 −	400 = ?	600 −	400 = ?
6,000 −	3,000 = ?	9,000 −	5,000 = ?
50,000 −	20,000 = ?	50,000 −	10,000 = ?
400,000 −	100,000 = ?	600,000 −	300,000 = ?
? −	? = ?	? −	? = ?

362. Multiply across. Add multiplicands and products.

7 × 5 = ?	2 × 8 = ?	2 × 10 = ?	1 × 12 = ?
5 × 5 = ?	10 × 8 = ?	10 × 10 = ?	10 × 12 = ?
? × 5 = ?	? × 8 = ?	? × 10 = ?	? × 12 × ?
1 × 5 = ?	3 × 6 = ?	3 × 12 = ?	5 × 20 = ?
10 × 5 = ?	20 × 6 = ?	10 × 12 = ?	20 × 20 = ?
100 × 5 = ?	100 × 6 = ?	100 × 12 = ?	300 × 20 = ?
? × 5 = ?	? × 6 = ?	? × 12 = ?	? × 20 = ?

REVIEW.

363. Add:

1.	2.	3.	4.
260,371	161,003	131,130	400,756
40,252	39,062	52,321	71,318
30,009	67,226	270,303	8,888
46,880	310,016	99,999	77,777
123,456	20,645	42,598	12,831
80,991	8,271	60,570	6,954
14,868	50,250	5,709	4,226
5,617	21,809	83,006	52,010
831	174	14,159	6,666

5. 184,756 + 98,765 + 8,438 + 789 + 2,468 + 1,892 + 860 + 3,456.

6. 95,438 + 264,838 + 124,606 + 88,776 + 9,543 + 32,685 + 18,943 + 250,608 + 27,655.

364. Find answers:

1. \$260,371 −\$40,252	2. −\$1,089.91 \$3,002.00	3. \$468,800 −\$108,991
4. −100,001 514,868	5. \$610,030 −\$448,315	6. −75 174,004

365. Multiply:

1. 10,345 × 84	6. 47,695 × 19	11. 12,847 × 76
2. 19,876 × 48	7. 13,642 × 65	12. 10,635 × 87
3. 24,680 × 24	8. 12,896 × 73	13. 9,876 × 99
4. 33,465 × 29	9. 11,865 × 82	14. 16,428 × 54
5. 27,654 × 35	10. 10,056 × 95	15. 13,295 × 67

DIVISION.

366. Written Exercises.

Divide:

1. 40,337 ÷ 19	6. 286,638 ÷ 946	11. 84,318 ÷ 38
2. 33,684 ÷ 28	7. 153,750 ÷ 1,025	12. 100,295 ÷ 44
3. 48,211 ÷ 37	8. 828,402 ÷ 1,367	13. 153,610 ÷ 49
4. 65,338 ÷ 46	9. 477,522 ÷ 2,151	14. 172,819 ÷ 55
5. 58,767 ÷ 57	10. 774,038 ÷ 2,572	15. 189,570 ÷ 63

MORE THAN ONE OPERATION.

367. Written Exercises.

1. $(48 \times 24) \div 12$
2. $48 \times (24 \div 12)$
3. $100 - (63\frac{1}{2} + 24\frac{1}{4})$
4. $(100 - 63\frac{1}{2}) + 24\frac{1}{4}$
5. $100 + 24\frac{3}{4} - 63\frac{1}{2}$
6. $(\frac{4}{5}$ of $100) \times 3\frac{3}{4}$
7. $\frac{4}{5}$ of $(100 \times 3\frac{3}{4})$
8. $3\frac{1}{2} + (5\frac{1}{3} \times 8)$
9. $(3\frac{1}{2} + 5\frac{1}{3}) \times 8$
10. $(16 \times 15\frac{1}{4}) - 13$
11. $16 \times (15\frac{1}{4} - 13)$
12. $(4\frac{1}{4} + 12\frac{1}{2} + 3\frac{1}{4}) \times 3\frac{2}{5}$

368. Oral Problems.

1. A piece of ground is 100 feet long and 25 feet wide. How many feet of fence will be needed to enclose it?

2. A spool of thread contains 200 yards. How many inches does it contain?

3. If three quarts of molasses cost 18 cents, how much must be paid for a gallon?

4. A customer pays 18 cents for three-fourths of a gallon of molasses. What is the price of a gallon?

5. A boy hires a sailboat at 60 cents an hour and uses it from half-past 8 o'clock until 10. How much should he pay?

6. A woman divides a dollar and a half between two children. What part of a dollar does she give to each?

7. A farmer had 25 sheep. He bought 42 and sold 16. How many sheep had he then?

8. At 3 cents a mile, what would be the fare from New York to Philadelphia, 90 miles?

9. The distance between New York and Albany is 140 miles, and the fare is $2.80. What is the rate per mile?

10. If there are 60 matches in a box, how many are there in 8 boxes?

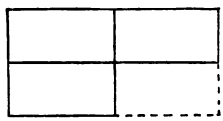
369. Written Problems.

1. A field, in the shape of a rectangle, is 275 yards long and 105 yards wide. How many yards of fence will it take to enclose it?

2. How many half-pints are there in a 15-gallon keg of cider?

3. If 3 yards of silk cost $1.80, what will be the cost of $5\frac{3}{4}$ yards?

4. A person pays $186 for three-quarters of a plot of ground. What would he have had to pay if he had bought the other quarter also? (Mark in each quarter its price.)



5. A man rents a house for $360 a year. How much rent does he pay from January 1 to August 1?

6. A grocer puts $9\frac{1}{2}$ pounds of coffee into two equal packages. How much is there in each package?

7. A gardener raised $98\frac{1}{2}$ bushels of potatoes. He used $4\frac{1}{8}$ bushels and sold $53\frac{1}{4}$ bushels. How many bushels had he left?

8. At 2 cents per mile, what is the fare from Boston to New York, 221 miles?

9. If a train goes 40 miles an hour, how many minutes does it take to go one mile?

10. If there are 60 matches in a box, how many matches are there in two dozen boxes?

11. When eggs cost 18 cents per dozen, what is the cost of 100 eggs?

12. A lot cost $\$750$, and the house built on it cost three times as much. What did both cost?

EASY FRACTIONS.

370. Preliminary Exercises.

How many inches in 1 foot? How many inches in $\frac{1}{2}$ foot? How many inches in $\frac{1}{3}$ foot? How many inches in $\frac{1}{6}$ foot?

How many inches in $\frac{1}{3}$ foot and $\frac{1}{6}$ foot? What part of a foot is $\frac{1}{3}$ foot $+ \frac{1}{6}$ foot?

371. Divide a line into thirds. Place a line of the same length underneath, and divide it into sixths. Which is longer, $\frac{1}{3}$ or $\frac{1}{6}$? How many sixths are there in one-third? $\frac{1}{3}$ = how many sixths? $\frac{1}{2}$ = how many sixths? $\frac{1}{2} + \frac{1}{3}$ = how many sixths?

372. Written Exercises.

1. $2\frac{1}{2} + 3\frac{1}{3}$	2. $5\frac{1}{3} + 7\frac{1}{6}$	3. $6\frac{1}{2} + 9\frac{1}{6}$	4. $9\frac{1}{3} + 10\frac{2}{3}$	5. $18\frac{1}{6} + 9\frac{1}{6}$
6. $24\frac{1}{6} + 18\frac{2}{3}$	7. $23\frac{1}{2} + 14\frac{2}{3}$	8. $47\frac{1}{2} + 8\frac{3}{4}$	9. $50\frac{1}{2} + 84\frac{3}{8}$	10. $81\frac{2}{3} + 6\frac{5}{6}$
11. $33\frac{1}{3} + 16\frac{2}{3}$	12. $48 - 3\frac{1}{2}$	13. $54 - 27\frac{1}{3}$	14. $29 - 19\frac{1}{6}$	15. $70 - 23\frac{1}{8}$
16. $213 - 65\frac{2}{3}$	17. $94 - 56\frac{3}{4}$	18. $83 - 9\frac{5}{6}$	19. $62\frac{1}{2} - 58\frac{1}{4}$	20. $120\frac{1}{2} - 34\frac{1}{8}$

MULTIPLICATION.

373. Written Exercises.

Multiply:

1.	712×203	11.	$456 \times 103\frac{1}{2}$
2.	327×405	12.	$456 \times 103\frac{1}{4}$
3.	584×607	13.	$456 \times 130\frac{5}{6}$
4.	246×809	14.	$456 \times 301\frac{3}{8}$
5.	$924 \times 1{,}011$	15.	$1{,}024 \times 204\frac{3}{4}$
6.	$1{,}011 \times 924$	16.	$9{,}236 \times 106$
7.	234×234	17.	$634 \times 27\frac{1}{3}$
8.	304×456	18.	$1{,}876 \times 405\frac{1}{4}$
9.	132×789	19.	$683 \times 25\frac{3}{7}$
10.	344×273	20.	$279 \times 3{,}050$

SHORT METHODS.

374. Written Exercises.

Write answers:

643 287 ? 25 1,000	Beginning at the bottom say 12, 15, and 5 (writing it in its place) are 20. 4, 12, 16, and 4 (writing it) are 20. 4, 10. The missing number is 45.

1.	2.	3.	4.	5.
293	870	315	?	699
64	?	487	208	87
712	54	?	63	208
?	387	95	5	?
1,340	1,495	1,000	1,402	997

375. $\frac{135}{28} = 4\frac{?}{28}$.

We see that the quotient figure is 4, which is written. Four 8's are 32, and 3 (writing it) are 35. Four 2's are 8, 3 (the ten from 35) are 11, and 2 (writing it), are 13. *Ans.* $4\frac{23}{28}$.

6.	$32\overline{)147}$	11.	$61\overline{)360}$	16.	$19\overline{)180}$
	$4\frac{?}{32}$		$5\frac{?}{61}$		$9\frac{?}{19}$
7.	$21\overline{)160}$	12.	$71\overline{)490}$	17.	$51\overline{)300}$
8.	$280 \div 41$	13.	$720 \div 81$	18.	$180 \div 41$
9.	$450 \div 51$	14.	$540 \div 91$	19.	$210 \div 31$
10.	$\frac{240}{31} = 7\frac{?}{31}$	15.	$\frac{210}{71} = 2\frac{?}{71}$	20.	$\frac{180}{21} = 8\frac{?}{21}$

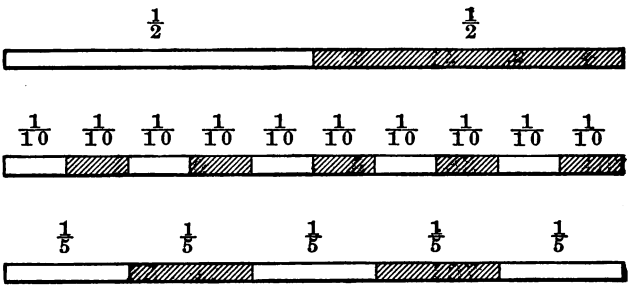
376. Do not place the multiplier under the multiplicand.

1. 183×4	4. 512×8	7. 919×20
2. 734×11	5. 376×40	8. 999×3
3. 376×5	6. 609×9	9. 734×60

HALVES AND FIFTHS.

377. Preliminary Exercises.

How many cents in one-fifth of a dime? How many cents in one-tenth of a dime? How many cents in one-half of a dime?



How many tenths in one-half? How many tenths in one-fifth? How many tenths in one-half plus one-fifth?

$\frac{1}{5} = \frac{?}{10}$	$\frac{2}{5} = \frac{?}{10}$	$\frac{3}{5} = \frac{?}{10}$	$\frac{4}{5} = \frac{?}{10}$	$\frac{1}{2} = \frac{?}{10}$
$\frac{2}{10} = ?$	$\frac{4}{10} = ?$	$\frac{5}{10} = ?$	$\frac{6}{10} = ?$	$\frac{8}{10} = ?$

378. Written Exercises.

1. $19\frac{1}{2}$	2. $23\frac{1}{2}$	3. $35\frac{1}{2}$	4. $64\frac{1}{2}$	5. $47\frac{2}{5}$
$+1\frac{1}{5}$	$+2\frac{2}{5}$	$+3\frac{3}{5}$	$+5\frac{4}{5}$	$+33\frac{3}{5}$
6. $25\frac{1}{2}$	7. $50\frac{1}{2}$	8. $84\frac{3}{5}$	9. $92\frac{4}{5}$	10. 68
$-16\frac{1}{5}$	$-29\frac{2}{5}$	$-77\frac{1}{2}$	$-\frac{1}{2}$	$-10\frac{2}{5}$

FOURTHS AND FIFTHS.

379. Oral Exercises.

When we add *halves* and *fifths*, we change both to *tenths*. To what must we change *fourths* and *fifths* when we wish to add them? Why will it not do to use *tenths?*

380. Written Exercises.

1. $\frac{1}{4}$	2. $2\frac{1}{4}$	3. $3\frac{1}{4}$	4. $3\frac{3}{4}$	5. $15\frac{3}{4}$
$+\frac{1}{5}$	$+\frac{1}{5}$	$+1\frac{1}{5}$	$+1\frac{1}{5}$	$+3\frac{1}{5}$
6. $26\frac{1}{4}$	7. $38\frac{1}{4}$	8. $49\frac{2}{5}$	9. $97\frac{1}{5}$	10. $18\frac{1}{4}$
$+7\frac{2}{5}$	$+15\frac{3}{5}$	$+1\frac{1}{5}$	$+1\frac{1}{5}$	$+29\frac{4}{5}$
11. $61\frac{1}{4}$	12. $70\frac{2}{5}$	13. $83\frac{3}{5}$	14. $55\frac{4}{5}$	15. $32\frac{4}{5}$
$-52\frac{1}{5}$	$-9\frac{1}{4}$	$-20\frac{1}{4}$	$-48\frac{1}{4}$	$-17\frac{3}{4}$

381. Add:

1. $15\frac{1}{4}$	2. $23\frac{1}{5}$	3. $17\frac{1}{2}$	4. $49\frac{1}{2}$	5. $52\frac{1}{2}$
$9\frac{1}{4}$	$6\frac{1}{4}$	$9\frac{1}{4}$	$29\frac{1}{3}$	$20\frac{1}{4}$
$8\frac{1}{5}$	$\frac{1}{5}$	$3\frac{1}{5}$	$3\frac{1}{6}$	$10\frac{1}{8}$

382. Subtract:

1. 25	2. 36	3. 47	4. 58	5. 69
$3\frac{1}{2}$	$4\frac{1}{3}$	$5\frac{1}{4}$	$6\frac{1}{5}$	$7\frac{1}{6}$
6. $13\frac{1}{3}$	7. $81\frac{1}{4}$	8. $93\frac{1}{4}$	9. $47\frac{2}{5}$	10. $86\frac{4}{5}$
$5\frac{1}{3}$	$3\frac{1}{8}$	$38\frac{1}{6}$	$\frac{1}{4}$	$47\frac{1}{2}$

LONG DIVISION SIGHT DRILLS.

383. Give quotients at sight. Omit remainders when there are any.

$840 \div 210$	$420 \div 210$	$960 \div 320$	$840 \div 420$
$860 \div 430$	$990 \div 330$	$440 \div 220$	$390 \div 130$
$930 \div 310$	$880 \div 440$	$630 \div 210$	$660 \div 330$
$260 \div 130$	$280 \div 140$	$680 \div 340$	$640 \div 320$

384.

$840 \div 211$	$420 \div 216$	$960 \div 327$	$840 \div 422$
$860 \div 432$	$990 \div 337$	$440 \div 226$	$390 \div 131$
$930 \div 313$	$880 \div 448$	$630 \div 215$	$661 \div 330$
$260 \div 134$	$280 \div 149$	$680 \div 344$	$641 \div 321$

385.

$840 \div 209$	$421 \div 203$	$960 \div 319$	$849 \div 420$
$860 \div 429$	$992 \div 327$	$440 \div 219$	$398 \div 129$
$930 \div 309$	$883 \div 436$	$630 \div 209$	$667 \div 328$
$260 \div 129$	$284 \div 135$	$680 \div 339$	$645 \div 317$

386.

2,510 ÷ 499	2,420 ÷ 391	3,699 ÷ 411	1,610 ÷ 381
3,640 ÷ 510	1,743 ÷ 526	2,043 ÷ 482	3,682 ÷ 613
3,240 ÷ 620	4,821 ÷ 589	4,220 ÷ 693	5,834 ÷ 728
3,510 ÷ 679	2,033 ÷ 791	4,934 ÷ 816	7,215 ÷ 781

387.

750 ÷ 150	1,200 ÷ 150	910 ÷ 130	1,040 ÷ 130
1,260 ÷ 140	700 ÷ 140	980 ÷ 140	900 ÷ 150
780 ÷ 130	1,350 ÷ 150	1,170 ÷ 130	650 ÷ 130
1,120 ÷ 140	840 ÷ 140	350 ÷ 170	650 ÷ 130

DIVISION.

388. Written Exercises.

Divide:

1.	906,585 ÷ 135	11.	853,568 ÷ 531
2.	156,152 ÷ 153	12.	708,000 ÷ 594
3.	521,640 ÷ 161	13.	694,734 ÷ 689
4.	922,504 ÷ 183	14.	839,243 ÷ 847
5.	384,638 ÷ 215	15.	627,652 ÷ 1,032
6.	295,817 ÷ 256	16.	999,477 ÷ 3,254
7.	687,836 ÷ 293	17.	832,336 ÷ 5,409
8.	497,961 ÷ 347	18.	535,068 ÷ 7,611
9.	612,172 ÷ 396	19.	317,324 ÷ 9,801
10.	956,903 ÷ 452	20.	470,493 ÷ 2,043

389. Oral Problems.

1. A farmer had 42 bags of rye, each containing 2 bushels. How much rye did he have after selling 50 bushels?

2. I buy $1\frac{3}{4}$ lb. of 40-cent tea and hand the grocer a dollar. How much change does he give me?

3. If a man receives \$120 for three cows, how many should he sell to receive \$200?

4. Find the cost of 5 dozen oranges at a cent and a half apiece.

5. A boy sold some newspapers for 75 cents, on which he gained 18 cents. What did he pay for the papers?

6. Three girls divide equally among them 84 hickory nuts. What is the share of each?

7. A barrel of sugar contains 300 pounds. What is it worth at 5 cents a pound?

8. A man had 40 pigs and sold three-quarters of them at 3 dollars each. How much money did he receive?

9. A girl multiplied a number by 7 and her answer was 98. What number did she multiply?

10. A farmer exchanged 7 sheep worth \$12 each for cows worth \$42 each. How many cows did he get?

11. If a man walks 4 miles an hour for 5 hours a day, how many days would he take to walk 100 miles?

12. A man buys 2 pieces of ribbon for 90 cents, paying 10 cents per yard. There are $4\frac{1}{2}$ yards in one piece. How many yards are there in the other?

13. If 4 base-balls cost a dollar, how many dollars will 84 base-balls cost?

14. How many freight cars will there be in 4 trains of 41 cars each?

390. Written Problems.

1. A farmer had 800 bushels of wheat. How much had he after selling 8 loads of 70 bushels each?

2. I buy $1\frac{3}{4}$ lb. of beefsteak at 24 cents a pound, and give the butcher a dollar. How much change should I receive?

3. If a person receives $105 for 3 cows, how many cows should he sell to obtain $175?

4. Find the cost of 5 dozen oranges at the rate of 2 oranges for 3 cents.

5. By selling a house for $5,750 a man made a profit of $250. How much did he pay for the house?

6. Three brothers divide equally among them 679 acres of land. What is the share of each?

7. Five barrels of flour contain 980 pounds. What is the value of one barrel, when flour is worth 3 cents a pound?

8. A man sells $\frac{3}{4}$ of his pigs at $5 each. If he had 24 pigs at first, what did he receive for those he sold?

9. A girl multiplied a number by 7 and the answer was 2,814. What number did she multiply?

10. A farmer exchanges 12 sheep worth $15 each for cows worth $45 each. How many cows should he receive?

11. If a boy walks 2 miles an hour for 7 hours a day, how many days would he be in walking from Washington to New York, 224 miles?

12. A man buys 4 pieces of ribbon for 90 cents, paying 10 cents a yard. The first piece contains $1\frac{2}{3}$ yd., the second $2\frac{1}{2}$ yd., and the third $1\frac{5}{6}$ yd. How many yards are there in the fourth piece?

13. How many quarts are there in a barrel that contains $2\frac{1}{2}$ bushels?

MULTIPLICATION.

391. Oral Exercises.

The pupils should write answers at sight to the following questions placed on the blackboard.

Find the cost of:

1. 21 lb. of raisins, at 13¢ per pound.
2. 14 sofas, at $21 each.
3. 42 overcoats, at $21 each.
4. 31 yards of silk, at $2.20 per yard.
5. 32 horses, at $203 each.
6. 120 bbl. of flour, at $5.25 per barrel.
7. $4\frac{1}{2}$ tons of hay, at $14 per ton.
8. 400 lb. of sugar, at $5\frac{1}{2}$¢ per pound.
9. 16 hats, at $2\frac{1}{4}$ each.
10. 21 sheep, at $14 each.

DIVISION.

392. Sight Exercises.

Find cost of 1 pound, 1 gallon, etc. Write answers at sight:

1. $2.94 for 14 pounds of coffee.
2. $325 for 13 sofas.
3. $5.25 for 105 bottles of ink.
4. $9.92 for 32 pounds of butter.
5. $4,284 for 21 horses.
6. $480 for 96 barrels of flour.
7. $286 for 22 tons of hay.
8. $35 for 700 pounds of sugar.
9. $35.20 for 16 hats.
10. $225 for 15 sheep.
11. $18.00 for 15 dolls.
12. $33.60 for 30 yards of carpet.

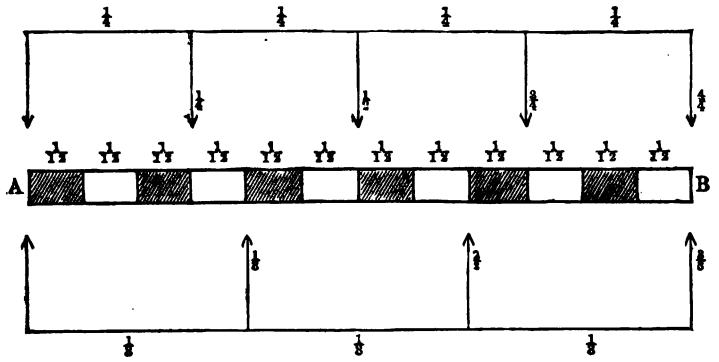
TABLE.

393. Find the total attendance of each day, the aggregate weekly attendance of each class, and the grand total.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Total.
1st class . . .	36	37	35	31	33	172
2d " . . .	38	40	36	32	37	?
3d " . . .	40	41	40	37	39	?
4th " . . .	42	42	43	41	42	?
5th " . . .	44	41	45	43	44	?
Totals	?	?	?	?	?	?

THIRDS AND FOURTHS.

394. Preliminary Exercises.



AB is divided into *twelfths*. How many twelfths in a fourth of AB? $\frac{1}{4}$ = how many twelfths? $\frac{1}{2} = \frac{?}{12}$. $\frac{3}{4} = \frac{?}{12}$. How many twelfths in $\frac{1}{3}$ of AB? $\frac{1}{3} = \frac{?}{12}$. $\frac{2}{3} = \frac{?}{12}$.

How many inches in $\frac{1}{4}$ foot? In $\frac{1}{2}$ foot? In $\frac{3}{4}$ foot? In $\frac{1}{3}$ foot? In $\frac{2}{3}$ foot?

How many inches in $\frac{1}{3}$ foot + $\frac{1}{4}$ foot? How many twelfths in one-fourth and one-third?

395. Written Exercises.

1. $12\frac{1}{3}$	2. $15\frac{1}{4}$	3. $18\frac{1}{4}$	4. $25\frac{3}{4}$	5. $63\frac{2}{3}$
$+6\frac{1}{4}$	$+9\frac{1}{3}$	$+27\frac{2}{3}$	$+40\frac{1}{3}$	$+15\frac{3}{4}$
6. $80\frac{1}{3}$	7. $37\frac{2}{3}$	8. $16\frac{3}{4}$	9. $75\frac{2}{3}$	10. $56\frac{3}{4}$
$-5\frac{1}{4}$	$-20\frac{1}{4}$	$-\frac{1}{3}$	$-26\frac{1}{4}$	$-18\frac{2}{3}$

396. Add:

1. $14\frac{1}{2}$	2. $20\frac{1}{2}$	3. $33\frac{1}{2}$	4. $5\frac{1}{2}$	5. $25\frac{1}{3}$
$3\frac{1}{3}$	$15\frac{2}{3}$	$20\frac{1}{3}$	$9\frac{2}{3}$	$25\frac{1}{3}$
$\frac{1}{4}$	$6\frac{1}{4}$	$11\frac{3}{4}$	$14\frac{3}{4}$	$25\frac{1}{4}$
6. $81\frac{1}{4}$	7. $27\frac{2}{3}$	8. $56\frac{1}{4}$	9. $65\frac{2}{3}$	10. $80\frac{2}{3}$
$30\frac{1}{4}$	$19\frac{1}{4}$	$8\frac{1}{3}$	$19\frac{3}{4}$	$5\frac{3}{4}$
$5\frac{1}{3}$	$3\frac{2}{3}$	$\frac{3}{4}$	$7\frac{1}{3}$	$10\frac{2}{3}$
11. $22\frac{1}{2}$	12. $37\frac{1}{2}$	13. $9\frac{1}{3}$	14. $75\frac{1}{3}$	15. $84\frac{1}{3}$
$5\frac{1}{4}$	$16\frac{1}{3}$	$3\frac{1}{3}$	$20\frac{1}{4}$	$10\frac{1}{4}$
$1\frac{1}{8}$	$5\frac{1}{6}$	$\frac{1}{9}$	$3\frac{1}{2}$	$2\frac{1}{6}$

397. Subtract:

1. $95\frac{1}{2}$	2. $87\frac{3}{8}$	3. $70\frac{1}{3}$	4. $62\frac{1}{3}$	5. $51\frac{2}{3}$
$70\frac{1}{6}$	$16\frac{1}{4}$	$24\frac{1}{6}$	$37\frac{1}{4}$	$48\frac{1}{4}$
6. $75\frac{1}{2}$	7. $87\frac{2}{3}$	8. $52\frac{7}{8}$	9. $40\frac{5}{8}$	10. $31\frac{5}{6}$
$61\frac{1}{3}$	$28\frac{1}{2}$	$14\frac{1}{8}$	$9\frac{1}{4}$	$13\frac{1}{3}$
11. 87	12. 62	13. 77	14. 56	15. 59
$55\frac{1}{2}$	$31\frac{1}{3}$	$54\frac{1}{4}$	$14\frac{1}{6}$	$21\frac{1}{8}$
16. 75	17. 16	18. 71	19. 93	20. 40
$61\frac{1}{9}$	$12\frac{2}{3}$	$43\frac{3}{4}$	$61\frac{7}{8}$	$26\frac{5}{6}$

DENOMINATE NUMBERS.

398. Written Exercises.

1. Change 3 lb. 5 oz. to ounces.

Since there are 16 ounces in 1 pound, in 3 pounds there will be 3 times 16 ounces, or 48 ounces; and in 3 lb. 5 oz. there will be 48 oz. + 5 oz., or 53 oz. *Ans.* 53 oz.

2. Change 49 oz. to pounds and ounces.

The number of pounds in 49 ounces will be 49 ounces ÷ 16 ounces, or 3. There is 1 ounce remaining. *Ans.* 3 lb. 1 oz.

3. 82 qt. to gallons and quarts.
4. 14 gal. 3 qt. to quarts.
5. 47 pt. to quarts and pints.
6. 28 qt. 1 pt. to pints.
7. 18 bu. 3 pk. to pecks.
8. 17 pk. 7 qt. to quarts.
9. 97 qt. to pecks and quarts.
10. 87 pk. to bushels and pecks.
11. 14 yd. 2 ft. to feet.
12. 13 ft. 3 in. to inches.
13. 119 in. to feet and inches.
14. 70 ft. to yards and feet.
15. Add 24 lb. 12 oz. and 19 lb. 4 oz.
16. 63 gal. 3 qt. + 4 gal. 1 qt.
17. 27 qt. 1 pt. + 37 qt. 1 pt.
18. 83 bu. 2 pk. + 7 bu. 2 pk.
19. 13 pk. 5 qt. + 9 pk. 3 qt.

20. From 28 ft. take 12 ft. 9 in.

21. 25 bu. − 14 bu. 1 pk.

22. 33 ft. − 19 ft. 11 in.

23. 35 gal. − 7 gal. 2 qt.

399. Oral Problems.

1. A girl receives 70 in arithmetic and 90 in reading. What is her average in the two studies?

2. A man paid $30 each for two cows and $60 for a third. What was the average price of the three cows?

3. Bought 2 lb. 8 oz. meat at 16 cents per lb., and 1 qt. 1 pt. molasses at 10¢ per quart. What was the total cost?

4. What will a bushel of chestnuts cost at 10 cents per quart?

5. If 12 tons of coal cost $60, how many tons can be bought for $75?

6. How long will it take 1 man to do a piece of work, if 12 men can do it in 12 days?

7. Six dozen collars cost $6.60. What is the price of one dozen?

8. A farmer had eighty sheep. How many had he left after selling $\frac{5}{8}$ of them?

9. Sold 2 cows at $30 each and 3 at $40 each. How much was received for the five cows?

10. A grocer sold 25 pounds of tea on Monday, and 5 pounds more on Tuesday than on Monday. How much did he sell on both days?

11. 1,200 cabbage plants are to be placed in 4 rows. How many plants will there be in each row?

12. A train started with 100 passengers. After 65 got on and 40 got off, how many passengers would there be on the train?

13. A man sold a cow for $60. How much did he pay for the cow if he lost $20 on the sale?

14. Bought a cow for $48. How much would be gained by selling her for $60?

15. How old in 1904 was a boy who was born in 1893?

16. If a man saves $40 per month, in how many months will he save enough to buy a lot worth $480?

17. A man and his son receive $50 for 10 days' work. The father's wages are $3 per day. What wages does the son receive per day?

18. A dealer buys 15 pairs of shoes at $2 per pair. How much does he gain if he sells them for $3 per pair?

19. A farmer bought a cow for $60, a sheep for $\frac{1}{5}$ as much, and a calf for $\frac{1}{6}$ as much. What did he pay for the three?

20. There were 24 boys present in a certain class on Monday, 22 on Tuesday, 20 on Wednesday. What was the average number present each day?

21. A woman gives two $20 bills for two dresses. One costs $10, the other $10 more than the first. How much change does she receive?

22. What will be the cost of 4 loads of flour, 10 barrels to the load, at $5 per barrel?

23. Henry buys 4 base-balls for $3. He gives $1.25 for one, 50 cents each for two. How much does he pay for the fourth?

24. A man buys a piano for $360. He pays $300 cash. How long will it take him to pay the balance at $12 per month?

25. A boy has $5\frac{1}{2}$ dozen eggs. How many will he have after selling 30 eggs?

400. Written Problems.

1. A boy received 70 per cent in arithmetic, 80 in reading, 90 in spelling, 80 in penmanship. What is his average?

2. A man paid $300 each for two horses, and $200 each for three horses. How much did the five horses cost? What was the average price?

3. I bought 4 lb. 6 oz. meat at 16¢ per pound, 1 gal. 1 qt. molasses at 24¢ per gallon. What was the total cost?

4. If chestnuts are sold at 5¢ per quart, how much will be received for $2\frac{1}{2}$ bushels?

5. If 23 tons of coal cost $115, how many tons can be bought for $145?

6. How long will it take 1 man to do a certain piece of work, if 26 men can do it in $7\frac{1}{2}$ days?

7. Six dozen collars cost $9.36. What is the price of one collar?

8. A merchant had 936 yards of muslin. After selling $\frac{5}{9}$ of it, how many yards were left?

9. A farmer sold 2 cows for $47 each, 3 for $36 each, and 7 for $29 each. How much did he receive for them all?

10. A grocer sold 86 pounds of sugar on Monday, 74 on Tuesday, 82 on Wednesday, 69 on Thursday, 58 on Friday, and as much on Saturday as on Monday and Wednesday together. How many pounds did he sell during the week?

11. 1,400 cabbage plants are to be planted in 40 rows. How many plants will there be in each row?

12. A train from New York to Philadelphia started with 265 passengers. 63 left the train at Newark, and 72 got on. 84 got on at New Brunswick, and 79 got off. 107 got on at Trenton, and 45 got off. How many were then on the train?

13. A man sold a house for $2,650. What did the house cost him if he lost $350 on the sale?

14. By selling a horse for $175, I lost $35. How much should I have gained or lost by selling the horse for $190?

15. George Washington was born in 1732 and died at the age of 67. In what year did he die?

16. If a man saves $25 per month, how many years will it take him to save enough to buy a lot for $600, and to build upon it a house costing $1,800?

17. A man and his son receive $108 for 24 days' work. If the son earns $1\frac{1}{2}$ per day, what does the father receive per day?

18. A shoe dealer buys 20 dozen pairs of shoes at $1.75 per pair. What is the amount of his bill?

19. A farmer bought a horse for $150, a cow for $\frac{2}{5}$ as much, and a pig for $\frac{1}{10}$ as much. What did he pay for the three?

20. There were 48 boys present in a certain class on Monday, 52 on Tuesday, 45 on Wednesday, 47 on Thursday, 38 on Friday. What was the average number present each day?

21. A woman gives three $20 bills for two dresses, one costing $24, and the other $10 more. How much change does she receive?

22. What will be the cost of 4 loads of flour, 12 barrels to the load, at $4\frac{1}{2}$ per barrel?

23. Henry buys nine bats. He pays 25 cents for one, 15¢ each for two, and 5¢ each for three. If he pays a dollar for all, how much apiece does he pay for the others?

24. A man buys a piano for $750, paying $525 cash. How long will it take to pay the balance at $25 per month?

25. A grocer has a box of eggs containing 30 dozen. How many will he have after selling two dollars' worth, at 80 eggs for a dollar?

401. Written Exercises.

Multiply:

1.	$6{,}793 \times 123$	7.	$478 \times 2{,}064$	13.	$198 \times 5{,}009$
2.	$3{,}798 \times 234$	8.	$269 \times 3{,}506$	14.	$164 \times 6{,}002$
3.	$1{,}789 \times 450$	9.	$177 \times 4{,}708$	15.	$136 \times 7{,}003$
4.	$1{,}375 \times 656$	10.	$240 \times 2\frac{1}{12}$	16.	$192 \times 18\frac{5}{6}$
5.	$1{,}058 \times 809$	11.	$450 \times 4\frac{1}{10}$	17.	$124 \times 36\frac{3}{4}$
6.	$687 \times 1{,}025$	12.	$168 \times 6\frac{3}{8}$	18.	$198 \times 54\frac{1}{2}$

402. Divide:

1.	$64{,}347 \div 29$	8.	$42{,}837 \div 987$	15.	$92{,}518 \div 88$
2.	$79{,}323 \div 49$	9.	$459{,}754 \div 1{,}971$	16.	$20{,}367 \div 187$
3.	$71{,}290 \div 69$	10.	$702{,}160 \div 3{,}907$	17.	$32{,}525 \div 386$
4.	$54{,}283 \div 89$	11.	$301{,}453 \div 5{,}905$	18.	$529{,}429 \div 585$
5.	$42{,}897 \div 192$	12.	$161{,}142 \div 7{,}903$	19.	$748{,}137 \div 786$
6.	$35{,}441 \div 394$	13.	$897{,}432 \div 9{,}901$	20.	$142{,}705 \div 988$
7.	$24{,}120 \div 596$	14.	$88{,}650 \div 38$	21.	$170{,}460 \div 1{,}863$

THIRDS AND FIFTHS.

403. Preliminary Exercises.

When *halves* and *fifths* are to be added or subtracted, they must be changed to *tenths*. When we added or subtracted *fourths* and *fifths*, we changed both to *twentieths*. To what must we change *thirds* and *fifths* before we can find the sum of $\frac{1}{3}$ and $\frac{1}{5}$, or the difference between them?

404. Oral Exercises.

1. $\frac{1}{3}$ $+\frac{1}{5}$	2. $5\frac{1}{3}$ $+3\frac{1}{5}$	3. $5\frac{1}{3}$ $-\frac{1}{5}$	4. $5\frac{1}{3}$ $-3\frac{1}{5}$	5. $\frac{2}{3}$ $+\frac{1}{5}$
6. $2\frac{2}{3}$ $+1\frac{1}{5}$	7. $\frac{2}{3}$ $-\frac{1}{5}$	8. $2\frac{2}{3}$ $-1\frac{1}{5}$	9. $\frac{2}{3}$ $+\frac{2}{5}$	10. $6\frac{2}{3}$ $+\frac{2}{5}$
11. $\frac{2}{3}$ $-\frac{2}{5}$	12. $1\frac{2}{3}$ $-1\frac{2}{5}$	13. $\frac{2}{3}$ $+\frac{3}{5}$	14. $7\frac{2}{3}$ $+\frac{3}{5}$	15. $\frac{2}{3}$ $-\frac{3}{5}$
16. $9\frac{2}{3}$ $-8\frac{3}{5}$	17. $9\frac{4}{5}$ $-8\frac{2}{3}$	18. $1\frac{4}{5}$ $+\frac{2}{3}$	19. 20 $-10\frac{2}{3}$	20. 16 $-8\frac{4}{5}$
21. $7\frac{1}{2}$ $+9\frac{1}{2}$	22. $8\frac{1}{2}$ $-3\frac{1}{3}$	23. $6\frac{1}{4}$ $+3\frac{1}{3}$	24. $5\frac{1}{2}$ $-1\frac{3}{8}$	25. $6\frac{4}{5}$ $-1\frac{1}{2}$
26. $2\frac{1}{4}$ $-2\frac{1}{5}$	27. $3\frac{2}{5}$ $+3\frac{1}{4}$	28. $6\frac{1}{2}$ $+2\frac{2}{3}$	29. $5\frac{3}{4}$ $-3\frac{2}{3}$	30. 10 $-8\frac{1}{6}$

405. Written Exercises.

1. $1\frac{1}{3}$ $+\frac{1}{5}$	2. $31\frac{1}{3}$ $+1\frac{1}{5}$	3. $5\frac{1}{5}$ $+21\frac{1}{3}$	4. $10\frac{2}{5}$ $+6\frac{1}{3}$	5. $25\frac{2}{3}$ $+12\frac{1}{5}$
6. $18\frac{1}{3}$ $-5\frac{1}{5}$	7. $29\frac{2}{3}$ $-18\frac{1}{5}$	8. $37\frac{2}{3}$ $-6\frac{2}{5}$	9. $64\frac{2}{3}$ $-56\frac{3}{5}$	10. $91\frac{4}{5}$ $-20\frac{2}{3}$

406. Add:

1.	2.	3.	4.	5.
$8\frac{1}{5}$	$11\frac{1}{3}$	$24\frac{2}{5}$	$64\frac{1}{5}$	$30\frac{2}{5}$
$3\frac{1}{3}$	$9\frac{1}{5}$	$28\frac{1}{5}$	$20\frac{1}{3}$	$30\frac{1}{3}$
$7\frac{1}{5}$	$6\frac{1}{3}$	$\frac{1}{3}$	$14\frac{2}{5}$	$30\frac{3}{5}$

6.	7.	8.	9.	10.
$1\frac{3}{4}$	$14\frac{1}{2}$	$59\frac{1}{3}$	$87\frac{1}{2}$	$69\frac{1}{4}$
$2\frac{3}{4}$	$25\frac{2}{3}$	$23\frac{1}{6}$	$2\frac{3}{4}$	$15\frac{2}{3}$
$3\frac{3}{4}$	$36\frac{3}{4}$	$6\frac{1}{9}$	$5\frac{1}{5}$	$8\frac{1}{6}$

407. Subtract:

1.	2.	3.	4.	5.
90	67	84	35	$48\frac{4}{5}$
$18\frac{4}{5}$	$63\frac{3}{5}$	$59\frac{2}{5}$	$16\frac{1}{5}$	27

6.	7.	8.	9.	10.
$59\frac{1}{4}$	$72\frac{1}{3}$	$63\frac{2}{3}$	$22\frac{3}{4}$	$41\frac{5}{6}$
$16\frac{1}{6}$	$28\frac{1}{5}$	$44\frac{1}{6}$	$8\frac{1}{6}$	$6\frac{3}{4}$

SIGHT DRILLS.

408. Give sums:

130 + 80	360 + 200	131 + 62	3,000 + 6,000
20 + 290	200 + 790	245 + 30	5,000 + 4,000
380 + 70	150 + 600	372 + 23	2,000 + 7,000
50 + 490	400 + 540	411 + 84	4,000 + 3,000

409. Give differences:

210 − 130	1,500 − 600	193 − 62	9,000 − 6,000
320 − 90	1,100 − 700	193 − 131	8,000 − 3,000
450 − 380	1,400 − 800	275 − 245	7,000 − 5,000
540 − 60	1,700 − 900	275 − 30	6,000 − 2,000

410. Give products:

31×8	200×8	61×6	$84 \times \frac{3}{4}$	121×4
21×9	300×7	84×2	$39 \times \frac{2}{3}$	224×2
42×4	400×6	91×5	$96 \times \frac{1}{2}$	321×3
73×3	500×5	71×7	$78 \times \frac{1}{3}$	432×2

411. Give quotients:

$248 \div 8$	$248 \div 31$	$4{,}200 \div 700$	$4{,}200 \div 6$	$188 \div 2$
$189 \div 9$	$168 \div 21$	$4{,}800 \div 600$	$4{,}800 \div 8$	$279 \div 3$
$168 \div 4$	$126 \div 42$	$2{,}700 \div 300$	$2{,}700 \div 9$	$284 \div 4$
$219 \div 3$	$219 \div 73$	$3{,}600 \div 900$	$3{,}600 \div 4$	$155 \div 5$

412. Add:

$\frac{1}{2}+\frac{1}{2}$	$\frac{1}{4}+\frac{1}{5}$	$\frac{1}{2}+\frac{1}{6}$	$\frac{1}{2}+\frac{1}{3}+\frac{1}{4}$	$\frac{1}{2}+\frac{3}{8}$
$\frac{1}{2}+\frac{1}{3}$	$\frac{1}{3}+\frac{1}{4}$	$\frac{1}{3}+\frac{1}{6}$	$\frac{1}{2}+\frac{1}{3}+\frac{1}{6}$	$\frac{1}{3}+\frac{2}{9}$
$\frac{1}{2}+\frac{1}{4}$	$\frac{1}{3}+\frac{1}{5}$	$\frac{1}{3}+\frac{1}{9}$	$\frac{1}{2}+\frac{1}{4}+\frac{1}{5}$	$\frac{1}{2}+\frac{2}{5}$
$\frac{1}{2}+\frac{1}{5}$	$\frac{1}{4}+\frac{1}{8}$	$\frac{1}{2}+\frac{1}{8}$	$\frac{1}{2}+\frac{1}{4}+\frac{1}{8}$	$\frac{1}{4}+\frac{3}{8}$

413. Oral Problems.

1. What two numbers are contained in 26 without a remainder?

A number that divides another exactly is called a *factor* of it.

2. Find two factors of 34.

3. What part of an hour is 15 minutes?

4. When tea is 60 cents a pound, how much can be bought for 30 cents?

5. Find two factors of 39.

6. If dress goods are worth 20 cents a yard, what part of a yard can be bought for 15 cents?

7. 16 hours is what part of a day?

8. I have a gallon of milk. How many quarts and pints will I have after selling 2 quarts and 1 pint?

9. Find two factors of 93.

10. When cheese is 16 cents a pound, how many ounces can be bought for 10 cents?

11. There are 60 seconds in a minute. How many seconds in $\frac{2}{3}$ of a minute?

12. When ribbon is 60 cents a yard, what part of a yard can be bought for 40 cents?

414. Written Exercises.

Multiply:

1. $9{,}304 \times 28$	11. $7{,}003 \times 47$	21. 686×237
2. $2{,}898 \times 38$	12. $9{,}438 \times 57$	22. 417×348
3. $8{,}063 \times 48$	13. $7{,}508 \times 67$	23. 285×457
4. $4{,}093 \times 58$	14. $4{,}605 \times 77$	24. 149×568
5. $7{,}435 \times 68$	15. $4{,}001 \times 87$	25. 893×647
6. $7{,}624 \times 78$	16. $8{,}057 \times 97$	26. 247×786
7. $6{,}042 \times 88$	17. $8{,}924 \times 8\frac{1}{2}$	27. 913×879
8. $1{,}823 \times 98$	18. $7{,}634 \times 8\frac{1}{3}$	28. 865×965
9. $7{,}204 \times 27$	19. $7{,}837 \times 7\frac{1}{4}$	29. 798×897
10. $4{,}785 \times 37$	20. $8{,}766 \times 9\frac{1}{5}$	30. 568×906

415. Divide:

1.	98,461 ÷ 27	12.	17,441 ÷ 56
2.	87,925 ÷ 37	13.	76,370 ÷ 66
3.	47,129 ÷ 47	14.	81,552 ÷ 76
4.	89,990 ÷ 57	15.	90,139 ÷ 86
5.	21,882 ÷ 67	16.	30,190 ÷ 96
6.	54,754 ÷ 77	17.	17,363 ÷ 273
7.	31,417 ÷ 87	18.	64,071 ÷ 372
8.	42,784 ÷ 97	19.	28,181 ÷ 475
9.	85,743 ÷ 26	20.	10,469 ÷ 574
10.	35,186 ÷ 63	21.	925,182 ÷ 4,756
11.	99,328 ÷ 46	22.	669,100 ÷ 5,747

AREAS OF RECTANGLES.

416. Preliminary Exercises.

1. Draw upon the blackboard a square having sides measuring one yard. Its area is one square yard.

2. How do we determine the number of square inches in a rectangle 4 inches long, 3 inches broad?

3. How do we determine the number of square feet in a rectangle 6 feet long, 3 feet broad?

4. How many square yards are there in a rectangle 5 yards long, 4 yards broad?

5. How many yards are there in the sides of a rectangle 15 feet long, 12 feet wide?

417. Oral Problems.

1. How many square yards of carpet will be needed to cover a floor 15 feet long, 12 feet wide?

2. A piece of cloth is 24 yards long and 2 yards wide. How many square yards does it contain?

3. How many feet in the perimeter of a square containing 9 square yards?

4. A 3-inch square is what part of a rectangle 6 inches long, 3 inches wide?

5. How many 2-foot squares are contained in a rectangle 6 feet long, 4 feet wide?

6. Find the perimeter in feet and the area in square feet of a rectangle 24 inches long, 18 inches wide.

7. How many rugs 2 yards long, 1 yard wide, will be needed to cover a floor 6 yards long, 4 yards wide?

8. How many yards in the perimeter of a room 24 feet long, 21 feet wide?

9. How many square yards are there in 6 rugs, each $2\frac{1}{2}$ yards long, 1 yard wide?

10. If it requires 16 yards of material 1 yard wide to make a dress, how many yards will be required of material that is 2 yards wide?

418. Written Problems.

1. What is the perimeter of an envelope $6\frac{1}{4}$ inches long, $3\frac{1}{2}$ inches wide?

2. Find the area of a sheet of letter paper 11 inches long, $8\frac{1}{2}$ inches wide.

3. One wall of a room is 12 feet wide and 9 feet high. How many square feet of plaster will it require if it contains a window 6 feet high and 4 feet wide?

4. How many 3-foot squares will be contained in a rectangle 15 feet long, 12 feet wide?

5. Find the number of square yards in a playground 21 yards long, 16 yards wide.

419. ROMAN NOTATION.

1	I		40	XL (50–10)	700	DCC	
2	II		50	L	800	DCCC	
3	III		60	LX	900	CM (1000–100)	
4	IV (5–1)		70	LXX	1,000	M	
5	V		80	LXXX	2,000	MM	
6	VI		90	XC (100–10)	3,000	MMM	
7	VII		100	C	4,000	$\overline{\text{IV}}$	
8	VIII		200	CC	5,000	$\overline{\text{V}}$	
9	IX (10–1)		300	CCC	6,000	$\overline{\text{VI}}$	
10	X		400	CD (500–100)	7,000	$\overline{\text{VII}}$	
20	XX		500	D	8,000	$\overline{\text{VIII}}$	
30	XXX		600	DC	9,000	$\overline{\text{IX}}$	

420. Write in Roman numerals:

101	125	147	169	184	199	214	238
256	279	304	328	345	372	386	399

421. Read:

XCIX	CXXI	CCIV	CCXXIX
CCCIX	LXXVIII	CCCXLIX	LXXXIV
CCCXXIX	CCLXXII	CCCLXXXV	CCXCVIII

422. Write in Roman numerals:

459	563	674	708	891	999	1,001
1,123	1,234	1,345	1,567	1,609	1,745	1,893

423. Read:

CCLXXXIV	MDCCXXV	DCXLIII
MDCLXV	CCCLXXXV	DCCCXCVI
MDCCXLVIII	CDXCVI	MDCCCLXXXIX

424. A dash above a letter or combination of letters in Roman notation increases its value a thousand fold. $\overline{\text{IV}} = 4{,}000$, $\overline{\text{X}} = 10{,}000$.

425. NOTE. — Owing to its very limited application, time should not be spent unnecessarily on Roman notation.

426. Can you mention some uses of Roman notation? How is 4 expressed on the face of a clock? In which other way than the one given can 9 be written with Roman numerals? 40? 90? 400?

ADVERTISEMENTS.

Nature Study.

PLANTS AND ANIMALS.

Bass's Plant Life. Lessons about plants and flowers. Boards. 25 cents.

Spear's Leaves and Flowers. Elementary botany for second and third grades. Boards. 25 cents.

Grinnell's Our Feathered Friends. Gives a description of forty common varieties. For middle grades. Boards. 30 cents.

Bass's Animal Life. For second and third grades. Boards. 35 cents.

Wright's Seaside and Wayside. Book I. Crabs, wasps, spiders, bees, mollusks. For second grades. 25 cents.

Wright's Seaside and Wayside. Book II. Ants, flies, earth-worms, beetles, barnacles, starfish. For third grade. 35 cents.

Wright's Seaside and Wayside. Book III. Plant life, butterflies, grasshoppers and birds. For fourth and fifth grades. 45 cents.

Agassiz's First Lessons in Natural History. Lessons on hydroids, corals, and echinoderms, for very young children. Paper. 25 cents.

Miller's My Saturday Bird Class. About the Common Birds. Boards. 25 cents.

Eckstorm's Bird Book. Natural history of birds for grammar grades. Cloth. 60 cents.

ROCKS AND MINERALS.

Hyatt's About Pebbles. Develops power of accurate observation by use of common pebbles. Paper. 10 cents.

Richards's First Lessons in Minerals. Paper. 10 cents.

Clapp's Observation Lessons on Common Minerals. Paper. 30 cents.

Crosby's Common Minerals and Rocks. Paper. 40 cents. Cloth. 60 cents.

NATURE STUDY READERS.

Bass's Beginner's Reader. For youngest pupils. Boards. 25 cents.

Griel's Glimpses of Nature for Little Folks. For first reader grades. Boards. 30 cents.

Warren's from September to June with Nature. For first reader grades. Boards. 35 cents.

Brown's Alice and Tom. For third and fourth reader grades. Cloth. 40 cents.

Trimmer's History of the Robins. For third grades. Cloth. 20 cents.

Laing's Life of a Bean. For first year grades. Paper. 15 cents.

Smith's Studies in Nature and Language Lessons. Paper. 15 cents.

BOOKS FOR TEACHERS.

Scott's Nature Study and the Child. Methods, lessons and courses. Cloth. $1.50.

Goodale's A Few Common Plants. Paper. 20 cents.

Ricks's Natural History Object Lessons. Plants and animals, and their uses. Cloth. $1.50.

Clark's Practical Methods in Microscopy. Cloth. $1.60.

Charles's How to Read a Pebble. In preparation.

Hyatt's Commercial and Other Sponges. Paper. 20 cents.

Hyatt's Common Hydroids, Corals and Echinoderms. Paper. 30 cents.

Hyatt's Mollusca. Paper. 30 cents.

Hyatt's Worms and Crustacea. Paper. 30 cents.

Sent postpaid on receipt of price by the publishers. Classified and descriptive circular of books upon Nature Study and Elementary Science free on request.

D. C. HEATH & CO., Publishers, Boston, New York, Chicago

Reading for Primary Grades.

DRILL AND PRACTICE READERS.

Bass's The Beginner's Reader. For youngest classes. The subject matter is attractive, the vocabulary serviceable and the method composite. Boards. 25 cents.

Fuller's Illustrated Primer. The word-method in an attractive form. Especially helpful in teaching the first one hundred nouns. Boards. 25 cents.

Badlam's Primer. The phonetic method, with diacritical marks. Boards. 25 cents.

Badlam's First Reader. To follow the primer described above. Boards. 30 cents.

Regal's Lessons for Little Readers. Will enlarge the vocabulary and interests of first reader classes. Cloth. 30 cents.

LITERATURE FOR LITTLE PEOPLE.

Mother Goose. Arranged by C. Welsh. Paper, two parts, each 10 cents; cloth, two parts in one volume, 30 cents.

Six Nursery Classics. Edited by M. V. O'Shea. Paper, 10 cents; cloth, 20 cents.

Goody-Two Shoes. Edited by C. Welsh. Paper, 10 cents; cloth 20 cents.

Heart of Oak Readers. Book I. Rhymes and Jingles. Edited by C. E. Norton. Cloth. 25 cents.

Heart of Oak Readers. Book II. Fables and nursery tales. Edited by C. E. Norton. Cloth. 35 cents.

Craik's So Fat and Mew Mew. Paper, 10 cents; cloth, 20 cents.

Crib and Fly. A tale of two terriers. Paper, 10 cents; cloth, 20 cents.

Segur's The Story of a Donkey. Paper, 10 cents; cloth, 20 cents.

Ruskin's King of the Golden River. Paper, 10 cents; cloth, 20 cents.

HISTORY AND MYTHOLOGY.

Pratt's America's Story for America's Children. Beginner's Book. Cloth, 35 cents.

Snedden's Docas, the Indian Boy. Cloth. 35 cents.

Firth's Stories of Old Greece. Cloth. 30 cents.

Bass's Stories of Pioneer Life. Cloth. 40 cents.

NATURE READERS.

Griel's Glimpses of Nature for Little Folks. For first reader classes. 30 cents.

Laing's Life of a Bean. A study for first year classes. Paper. 20 cents.

Bass's Stories of Plant Life. For first reader classes. Board. 25 cents.

Bass's Stories of Animal Life. For second reader classes. Board. 35 cents.

Wright's Seaside and Wayside Nature Reader. No. I. Cloth. 25 cents.

Wright's Seaside and Wayside Nature Reader. No. II. Cloth. 35 cents.

Miller's My Saturday Bird Class. Boards. 25 cents.

Spear's Leaves and Flowers. For second reader classes. Boards. 25 cents.

Warren's From September to June with Nature. 35 cents.

BOOKS FOR TEACHERS.

Badlam's Suggestive Lessons in Language and Reading. Cloth. $1.50.

Bronson's Reading Methods. Paper. 15 cents.

Hall's How to Teach Reading. Paper. 25 cents.

Laing's Reading. A manual for teachers. 75 cents.

Send for full descriptive circulars.

D. C. HEATH & CO., Publishers, Boston, New York, Chicago

TABLES

LINEAR MEASURE

12	inches (in.)	= 1 foot	ft.
3	feet	= 1 yard	yd.
5½	yards, or 16½ feet	= 1 rod	rd.
40	rods	= 1 furlong	fur.
320	rods	= 1 mile	mi.

1 mi. = 320 rd. = 1760 yd. = 5280 ft. = 63,360 in.

A *hand*, used in measuring the height of horses, = 4 in. A *knot*, used in measuring distances at sea, = 1.15 mi. A *fathom*, used in measuring the depth of the sea, = 6 ft.

SQUARE MEASURE

144	square inches (sq. in.)	= 1 square foot	sq. ft.
9	square feet	= 1 square yard	sq. yd.
30¼	sq. yd., or 272¼ sq. ft.	= 1 square rod	sq. rd.
160	square rods	= 1 acre	A.
640	acres	= 1 square mile	sq. mi.

1 A. = 160 sq. rd. = 4840 sq. yd. = 43,560 sq. ft.

A **Section** of land is a square mile.

Roofing, flooring, and slating are often estimated by the *square*, which contains 100 square feet.

SURVEYORS' MEASURE

In measuring land, surveyors use a chain (ch.) which contains 100 links (l.) and is 4 rods long. Since the chain is 4 rods long, a square chain contains 16 sq. rd., and 10 sq. ch. = 160 sq. rd., or 1 acre.

CUBIC MEASURE

1728	cubic inches (cu. in.)	= 1 cubic foot	cu. ft.
27	cubic feet	= 1 cubic yard	cu. yd.
128	cubic feet	= 1 cord	cd.
16	cubic feet	= 1 cord ft.	cd. ft.
8	cord feet	= 1 cord	cd.

NOTE. — In computing the contents of an enclosing wall, masons and brick-layers regard it as one straight wall whose length is the distance around it on the outside. Corners are thus measured twice.

A *perch* of stone or masonry is 16½ ft. long, 1½ ft. thick, and 1 ft. high, and contains 24¾ cu. ft.

MEASURES OF CAPACITY

Liquid Measure			Dry Measure		
4 gills	= 1 pint	pt.	2 pints	= 1 quart	qt.
2 pints	= 1 quart	qt.	8 quarts	= 1 peck	pk.
4 quarts	= 1 gallon	gal.	4 pecks	= 1 bushel	bu.

The *standard gallon* contains 231 cubic inches.
The *standard bushel* contains 2150.42 cubic inches.

The capacity of cisterns, reservoirs, etc., is often expressed in barrels (bbl.) of 31½ gallons each, or in hogsheads (hhd.) of 63 gallons each. In commerce, these vary in size.

AVOIRDUPOIS WEIGHT

16 ounces (c	= 1 pound	lb.
100 pounds	= 1 hundredweight	cwt.
2000 pounds	= 1 ton	T.

The
and in

1 bush
1 bush
1 bush
1 bush

8 drams	= 1 ounce	oz., or ℥.
12 ounces	= 1 pound	lb., or ℔.

One pound Apothecaries' weight = 5760 grains.

BRITISH OR STERLING MONEY

4 farthings	= 1 penny	*d.*
12 pence	= 1 shilling	*s.*
20 shillings	= 1 pound	£.
5 shillings	= 1 crown.	

The value of £1 is $4.8665 in United States gold coin.

The unit of French money is the franc, which is 19.3 cents. The unit of German

cents.